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J. W. S. Macfie & A. Ingram

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THREE CASES OF CARDIAC ANEURYSM IN NATIVE BOYS OF THE GOLD COAST

BY

J. W. S. MACFIE

AND

A. INGRAM.

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PLATE III

In this note we record in the briefest manner three cases of aneurysm of the heart in native boys of the Gold Coast, West Africa, which have come under our notice during the last four years. We have to thank Dr. H. T. Palmer, Dr. C. H. D. Ralph, and Dr. G. E. H. Le Fanu for the opportunity of examining the first, the second, and the third, respectively, and for furnishing the notes made at the autopsies, and we take this occasion of expressing our indebtedness to them.

CASE I. A native boy, aged seven years, who died suddenly in the early hours of the morning when getting from his bed. The boy was not seen before death, and no history of previous ill-health was reported by the parents.

At the autopsy the body was found to be that of a well developed boy. No macroscopical lesions were observed excepting those of the heart. The pericardium was full of blood, which had issued from a rupture, about a quarter of an inch long, in an aneurysm near the apex of the left ventricle. There were no pericardial adhesions. The cavity of the aneurysm contained well-formed fibrinous clot.

The *heart* (Plate III, fig. 2) was not hypertrophied; there was no valvular disease. At the apex of the left ventricle was a small saccular aneurysm extending on the surface from the tip of the heart downwards for about 15 mm., then outwards, and upwards on the left side for about 25 mm., and internally communicating with the

chamber of the left ventricle by a narrow opening. The aneurysm was composed of two chambers incompletely separated, a small cavity filled with fibrous clot at the very apex of the heart, and a larger cavity a little to the left side. In the photograph the larger cavity is shown after it had been laid open by a longitudinal incision. The larger cavity measured 25 mm. by 15 mm. by 15 mm., its wall was very thin, especially at its lower and anterior pole, where it had given way. The inner surface was partly covered by fibrinous clot.

Sections of the wall of the left ventricle showed a considerable degree of interstitial myocarditis. The aorta appeared to be healthy. The left coronary artery showed a slight degree of endarteritis together with some degeneration of the inner coat.

CASE II. A native boy, aged six years, who suddenly fell dead outside school. He had not been pushed or struck, and, it was stated, had never been ill nor attended by a doctor.

At the autopsy the body was found to be well nourished, without signs of injury or violence. In addition to the condition of the heart, presently to be described, there were found a few adhesions at the apex of the right lung, an enlarged spleen, and a few round worms (*Ascaris lumbricoides*) in the intestine; the organs of the body appeared to be otherwise healthy. The pericardium was full of blood clot. When this was cleared away it was seen that the blood had escaped from the heart through a small opening near the apex of the left ventricle. There were no pericardial adhesions. The posterior mediastinal glands were enlarged, and several of them contained yellow caseous matter.

The heart (Plate III, fig. 1) was not hypertrophied. On the left side, a little posterior to the middle of the ventricle and spreading on to the front of the heart, was a swelling nearly 30 mm. in diameter and raised about 10 mm. above the normal level of the heart, on this swelling were three distinct nodules, one anterior and two posterior. Connected with the swelling, at its lower and external margin, was a sac-like prolongation, about 17 mm. long and 14 mm. broad at its base, which projected freely on the posterior aspect of the heart; at its free margin, where the wall was very thin, was a small tear. On incising the heart it was found that the external bulgings were caused by two aneurysms, both opening a little above and to the

outer side of the apex of the left ventricle at the roots of the papillary muscles, the one anterior and the other posterior, but quite distinct. The latter had ruptured, thus bringing about the death of the boy.

At the base of the heart, lying between the ventricles just below the aortic orifice, was a rounded mass about 10 mm. in diameter which had the appearance of a gumma, both to the naked eye and in sections. The myocardium in the neighbourhood of the gumma showed a considerable increase of fibrous tissue. Sections of the wall of the left ventricle showed a slight degree of interstitial myocarditis. The left coronary artery showed a slight degree of endarteritis and degeneration of the inner coat.

CASE III. A native boy, aged twelve years, who died suddenly during a quarrel with another boy. At the autopsy it was noted that, in addition to the presence of an aneurysm of the heart, the liver and lungs showed signs of chronic inflammatory changes, and that the arteries were sclerosed. Death was due to heart failure.

The *heart* (Plate III, fig. 3) appeared to be slightly hypertrophied. With the exception of the apical portion, practically the whole of the posterior wall of the left ventricle was occupied by a convex dilatation of almost stony hardness; this dilatation formed a dome-shaped structure, with a diameter of about 40 mm. and a height of about 30 mm. In the photograph it is shown as seen from the inner aspect after the heart had been incised. The outer surface was smooth; there were no pericardial adhesions. The inner surface was irregularly studded with calcareous nodules, some of which were smooth, others very rough; it was divided by an oblique ridge of no great prominence into an upper and a lower portion. The middle part of the dome was thin and more or less translucent, and appeared to be bony.

On the aorta were numerous small patches of atheroma, which in sections showed calcification and proliferation of the inner coat. Sections of the wall of the left ventricle external to the aneurysm showed practically no fibrosis. The left coronary artery showed a slight degree of endarteritis, slighter than in either of the two preceding cases.

It is somewhat remarkable that these three cases, which are the only cases of cardiac aneurysm that we have hitherto met with in

the Gold Coast, were young boys (six to twelve years), for Legg (1883) considered that aneurysm of the heart was a 'disease of middle and advanced life, rather than a disease specially common below thirty, as Thurnam believed,' and Hall (1903) records only a solitary case under twenty, and this one due to trauma. At the time Legg wrote, the youngest case known was 'a little girl of twelve (who) died suddenly while at play from the bursting of the aneurysm.'

According to Hall, the aneurysms are nearly always single. It is interesting to note, therefore, that in these three cases, one aneurysm was bilocular, and one double. In all the three cases the aneurysms formed definite swellings or tumours on the surface of the heart, but there were no pericardial adhesions. In two of the cases the myocardium showed some degree of fibrosis, in the third no such change was apparent in the sections cut.

Death was sudden in all three cases, and, so far as could be ascertained, was not preceded by any symptoms of illness. Two of the boys died from the rupture of the aneurysm into the pericardium. In this connexion, it may be recalled that on a previous occasion (1917) attention was drawn to the fact that in the Gold Coast perforation into the pericardium of small aneurysms of the intra-pericardial aorta is not a very uncommon cause of sudden death in adult natives previously thought to be in good health and certainly capable of hard physical work.

Hall brings forward coronary endarteritis as 'the great cause of aneurysms of the left ventricle, and, with hardly any exceptions, as the sole cause of aneurysms at the apex.' The result, he says, is 'either sudden obstruction leading, if the collateral circulation is insufficient, to infarction, or gradual obstruction leading to replacement of the myocardium by fibrous tissue, which may or may not yield later to the blood pressure, and cause aneurysm,' and the most usual sequence of events 'a gradual stenosis of the artery by disease, to which is superadded thrombosis, causing sudden complete obliteration.' Particular interest, therefore, attaches to the condition of the coronary arteries in these cases. In all three the condition was similar; there was a slight degree of endarteritis together with some degeneration of the inner coat. Professor Ernest Glynn has been so kind as to examine the sections of the

arteries, and is of the opinion that the condition was not characteristic of syphilitic endarteritis, but that in view of the gumma-like tissue detected in the second case it was possibly of this nature.

Apart from the conditions of the heart, no other, or only slight macroscopic lesions were observed at the autopsies on these boys, who appeared to have been otherwise healthy, and, so far as could be ascertained, had not previously suffered from serious illness. It may be confidently assumed, however, that they had all previously suffered from malaria, and especially subtertian malaria, a disease from which probably no native child in the Gold Coast escapes. In the opinion of some authors, malarial endarteritis is a well-defined condition; Moreau (1918), for example, has recently referred to two cases of gangrene of the lower extremities, which he believed were the result of posterior tibial endarteritis, due to malaria. It is possible that the endarteritis in these cases of cardiac aneurysm was due to malaria, but further work on the pathology of the disease is necessary before this connexion can be established.

Obstruction of the arterioles is, however, admitted to be common in malaria, especially subtertian malaria, and to be the cause of many and varied complications. Dudgeon and Clarke (1917), in a recent study of the microscopical histology of malaria, remark that 'this vascular obstruction would seem to be most marked in the brain, spleen, and heart muscle.' The same authors found in all the six cases they examined fatty degeneration of the heart muscle, a condition which Legg considered 'certainly deserves attention as a cause of aneurysm.' If Hall is correct in attributing to coronary obstruction the chief part in the causation of aneurysms of the left ventricle, there seems no reason why such aneurysms should not be due to malaria.

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FIG. 1



FIG. 2



FIG. 3

THREE CASES OF CARDIAC ANEURYSM