

MEDICAL PRACTICE

*Clinicopathological Conference***A case of congestive cardiomyopathy**

DEMONSTRATION AT THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the quarterly clinicopathological conference held at the Royal College of Physicians of London on 26 April 1979 Professor J F Goodwin (1) took the chair and Dr C G C MacArthur (2) presented the case.

DR MACARTHUR: The patient was born in March 1931 and worked as a storekeeper. He was well until September 1974, when he complained of backache, breathlessness, and flu-like symptoms. On examination his blood pressure was 140/80 mm Hg, he was afebrile, and his chest and abdomen were normal. His illness was slow to settle and a viral pneumonia was suspected. A chest radiograph (fig 1) was reported to be normal but, in retrospect, showed a slightly enlarged heart. The patient returned to work but continued to feel unwell for some months. He did not see his GP again until January 1976, when he gave a history of wheezing and coughing at night. The GP found his chest normal and his blood pressure 120/80 mm Hg. He was

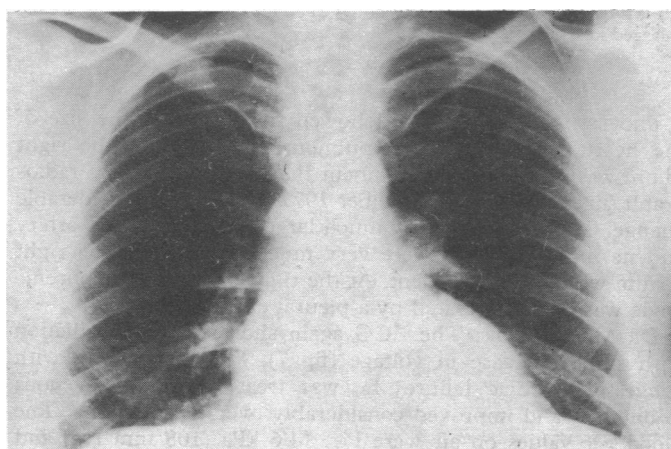


FIG 1—Chest radiograph taken on 14 October 1974 showing slightly enlarged heart.

treated with oxytetracycline with no improvement and was referred to Dr Sherwood Jones at Whiston Hospital. He was found to be in rapid atrial fibrillation with congestive cardiac failure. He was subsequently referred to Professor Goodwin at the Hammersmith Hospital. His major complaint was dyspnoea. He had no chest pain or haemoptysis. He had lost 12 kg but was still well built. He was taking frusemide, digoxin, spironolactone, and warfarin. There was no relevant past or family history. He did not smoke and took alcohol only occasionally. His blood pressure was normal. The jugular venous pressure was raised by 3 cm H₂O, and his arterial pulses were all present and equal but of small volume. The cardiac impulse was displaced to the left, almost to the anterior axillary line, and was rather jerky and diffuse. There was no oedema.

On auscultation there was a grade 2 pansystolic murmur at the cardiac apex, an early diastolic sound which was interpreted as a third heart sound, and a very short mid-diastolic murmur. In the pulmonary area there was a grade 2 short ejection murmur and the pulmonary second sound was accentuated. Full blood count and plasma urea and electrolyte concentrations were normal. The bilirubin was 18 μ mol/l (1.05 mg/100 ml), which was slightly raised above our upper limit of normal of 14 μ mol/l (0.8 mg/100 ml), but the alkaline phosphatase and the aspartate transaminase activities were normal. His Thrombotest result (4%) was rather lower than is ideal in patients on anticoagulants. The chest radiograph (fig 2) showed cardiomegaly with a pulmonary artery that was slightly more prominent than one would expect. The electrocardiogram (ECG) confirmed the presence of atrial fibrillation (fig 3). There were some single ventricular ectopics. There were abnormalities of repolarisation, but he was taking digoxin at the time. Cardiac catheterisation showed the following pressures (mm Hg): right ventricle 40-50/8, pulmonary artery 30-40/20-25, pulmonary artery wedge 30-45 (mean 25), left ventricle 90/28, and aorta 80/60; the cardiac index was 1.9 l/min/m². There was no gradient across the aortic valve. A right ventricular angiogram was performed (fig 4), which Professor Steiner will comment on.



FIG 2—Chest radiograph taken on 12 March 1976 showing cardiomegaly and prominent pulmonary artery.

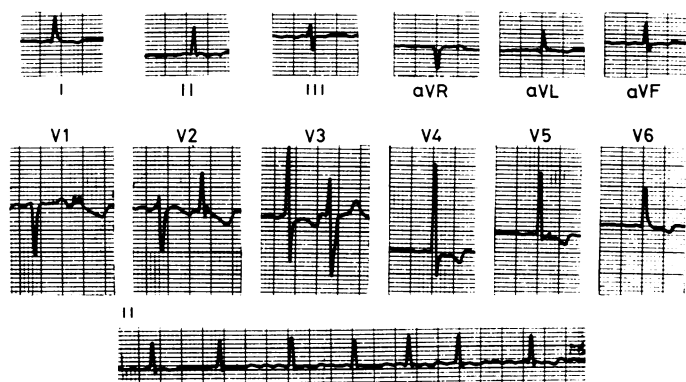


FIG 3—Atrial fibrillation, 9 April 1976.

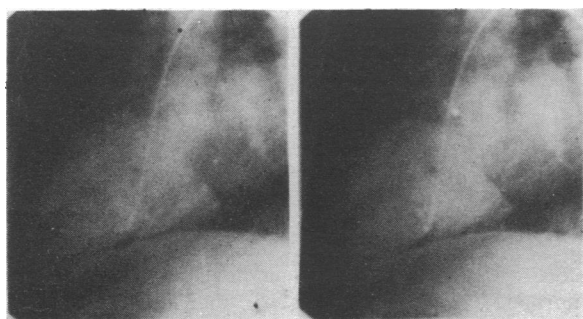


FIG 4—Right ventricular angiogram. Diastole is shown on the right and systole on the left.

PROFESSOR R E STEINER (3): There was a very distended large left ventricle which hardly contracted. There was moderate mitral incompetence, and the left atrium was slightly enlarged. There was no other abnormal feature.

DR MACARTHUR: At the time of cardiac catheterisation an endomyocardial biopsy was performed. Treatment was continued with digitalis, diuretics, and warfarin with good response. He was followed up by Dr Sherwood Jones at Whiston Hospital. He remained well until July 1977, when he was readmitted to Whiston Hospital after a sudden collapse, from which he recovered rapidly. He was readmitted to the Hammersmith Hospital in September 1977 after a month during which he had felt considerably worse with the gradual onset of severe dysp-

noea, orthopnoea, and ankle oedema. On examination he was afebrile and very depressed. He had the small peripheral pulses and cold fingers and toes of low cardiac output. He was in atrial fibrillation as before with a cardiac rate at the apex of 105/min. The jugular venous pressure was raised right up to the jaw with a systolic wave. The lungs were dull at both bases and there were bilateral crepitations. His liver was three finger-breadths enlarged but the spleen was not palpable. He had ascites and marked oedema of the legs and sacrum. A chest radiograph had been taken in June 1977 (fig 5).

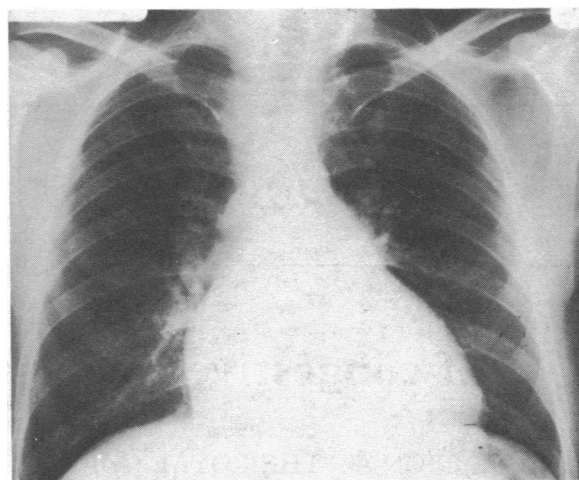


FIG 5—Chest radiograph taken on 25 June 1977 before re-admission.

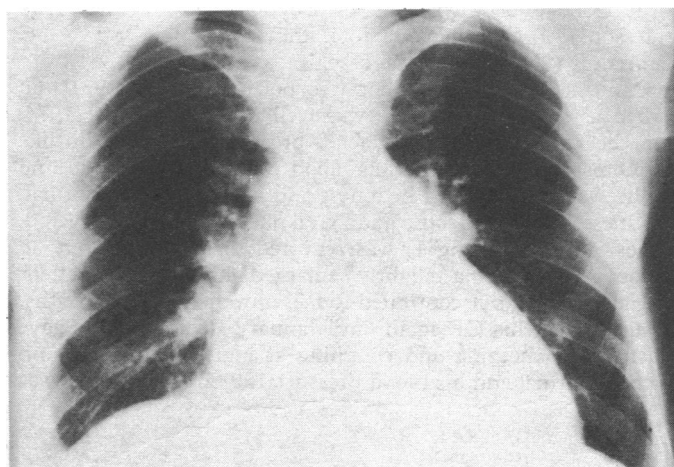


FIG 6—Chest radiograph taken on 7 September 1977, showing greatly enlarged heart.

PROFESSOR STEINER: This showed no change in the size of the heart. The upper lobe pulmonary vein above the right hilum was a little more prominent than before, but on a radiograph (fig 6) taken in September 1977 there was a considerable change. The heart was very much larger, the pulmonary artery and its main branches were very much bigger, and the right atrium was more prominent. At the right base the costophrenic angle was now obliterated by a pleural effusion.

DR MACARTHUR: The ECG again showed atrial fibrillation with some decrease in voltage (fig 7). He was very ill with congestive cardiac failure; he was treated with intravenous salbutamol and improved considerably over the next day. The blood gas values on air were P_{O_2} 14.6 kPa (108 mm Hg) and P_{CO_2} 3.3 kPa (24.8 mm Hg). The standard bicarbonate value was 23 mmol(mEq)/l. He deteriorated over the next few days,

becoming drowsy and unrousable. He developed jaundice, became hypotonic, and developed purpura on his abdominal wall. The plasma potassium concentration rose to 7.2 mmol (mEq)/l. The white cell count was 13×10^9 /l. Ten days after admission he died.

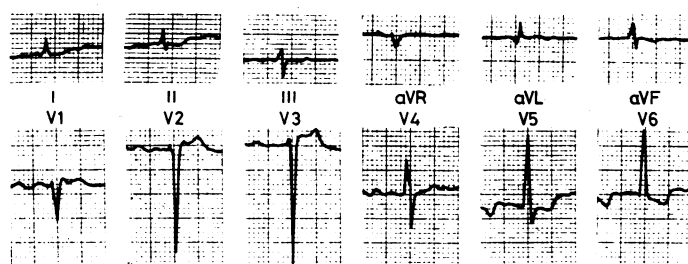


FIG 7—ECG performed on 6 September 1977.

PROFESSOR GOODWIN: I will now call on Professor Sleight to discuss this case.

PROFESSOR P SLEIGHT (4): I would like to ask one or two things just to get them out of the way: His erythrocyte sedimentation rate?

DR MACARTHUR: It was normal.

PROFESSOR SLEIGHT: Thank you. Now this man was 43 years old when he first became ill. He presented with an illness which might have been a red herring. He was not particularly febrile at the time and he had muscle aches. I do not think that had a lot to do with his final illness because his heart was large initially. It did, however, get bigger in the next two months or so. Whether this was the first manifestation of his illness or whether some chronic disease had been present for a long time is difficult to determine. His left ventricular function seems to have been impaired from the beginning. His nocturnal cough was very typical of early left ventricular failure. The next radiograph showed a prominent pulmonary artery. The second sound was loud and he had some degree of pulmonary hypertension, probably secondary to the left ventricular failure. A few months later he got this illness which was labelled "chills." Was he febrile during that illness?

DR E S SHERWOOD JONES (5): No.

PROFESSOR SLEIGHT: The next disturbing thing is his 12-kg loss in body weight. There are a lot of possibilities there: infections, systemic diseases, underlying neoplastic disorder, tuberculous pericarditis (the chest radiographs did not really look like pericarditis). The other obvious thing to bear in mind in a relatively young person with heart failure is thyroid heart disease.

DR MACARTHUR: There was no clinical evidence of thyroid disease and his thyroxine and triiodothyronine concentrations were normal.

PROFESSOR SLEIGHT: Thank you. The next question is, Was he ever abroad?

DR MACARTHUR: So far as we know he had lived in Lancashire all his life.

PROFESSOR SLEIGHT: So he is very unlikely to have picked up an eosinophilic tropical cardiomyopathy or Chagas's disease. I suppose he could have picked up toxoplasmosis in Lancashire. With these murmurs, particularly the diastolic murmur, one has to consider whether this was a recurrent disease—for example, rheumatic heart disease. Was this an attack of rheumatic fever which was atypical because the man was older? Did you measure his antistreptolysin O titre?

DR MACARTHUR: No.

PROFESSOR SLEIGHT: I ask because somebody with left ventricular dysfunction due to some general cause, due to a myocarditis, could present with the pansystolic murmur of mitral regurgitation. It is rather unusual in that type of mitral regurgitation to get much of a diastolic murmur but I wonder

whether there was something the matter with his mitral valve. I expect an echocardiogram was done and I would like to know whether that showed a thickened mitral valve or a thin pliable mitral valve with a small excursion in a large ventricle.

DR MACARTHUR: The echocardiogram showed a normal mitral valve.

PROFESSOR SLEIGHT: So one must accept that the diastolic murmur was just due to the regurgitated blood coming back through the mitral valve.

The whole diagnosis looks to me to be one of congestive cardiomyopathy. There are many causes of cardiomyopathy, and from the clinical point of view one has to think of the causes that one can do something about. One rarely gets a firm diagnosis in life or even after death on what is the cause of the left ventricular dysfunction in these congestive cardiomyopathies, and Cardiomyopathies can be classified into hypertrophic, congestive, and restrictive. The congestive group have a rather baggy heart, and seeing the angiogram one wonders how the patient can possibly be walking about with a heart with so little excursion. This man looks as though he had a congestive cardiomyopathy. The common things one has to think of are: thyroid diseases; alcohol; other toxins such as iron in haemochromatosis—I shall ask whether there was iron in the biopsy specimens although his serum iron concentration was normal; collagen diseases such as lupus erythematosus, polyarteritis, rheumatoid disease; infiltrations, for example, by leukaemic deposits; and, at the end of this list, a viral myocarditis.

There is a lot to be said in favour of viral myocarditis. He did have an illness that initially had "chills" to it but not much fever. He then had another illness which sounds as though it might have been infective. Viral myocarditis may be a very strange illness and sometimes the virus has disappeared long before you see the patient. Just occasionally one sees a patient in whom the left ventricular failure develops under one's eyes. I had a patient some years ago whose heart was normal before he went to Iraq, where he developed a severe attack of hepatitis. He was repatriated and while in hospital in England he developed left ventricular failure for the first time, but he made a good recovery over the next two years. I would certainly find it hard not to implicate the hepatitis virus in the genesis of that 19-year-old's left ventricular failure, but I would guess that his outlook is not very good and he might well present as this man did some years later looking like a case of so-called idiopathic congestive cardiomyopathy. Of course, not everyone recovers from viral myocarditis, but I would suggest that it is more common than we think. When surveys have been done—for example, in influenza epidemics—about one-third of patients show widespread T-wave changes during the acute phase of the illness, suggesting that a viral myocarditis is not uncommon even in influenza. Nevertheless, it is more commonly associated with Coxsackie viral infections and with the echoviruses.

Just in passing, as a clinical point, if one has a viral illness one ought not to take exercise. There was an interesting study in mice in which there was a 500-fold increase in Coxsackie virus particles in the heart in mice that were exercised compared with those that were not. It cannot be emphasised too much that if young people have virus illnesses they ought not to go on doing their exercise or training or rowing. There have been many examples of young people exercising and dying suddenly in the presence of relatively benign upper respiratory infections who are found to have a viral myocarditis.

Returning to this patient, one has to say that he had congestive cardiomyopathy and the likely cause is a virus infection. Sarcoidosis is another treatable possibility; thyroid disease is unlikely, as is haemochromatosis or alcohol; beriberi heart disease is virtually unknown in Britain. One has to think of cobalt, daunorubicin, and tricyclic therapy among the possible drugs. Looking at the biopsy result I would say that he had a congestive cardiomyopathy, probably as a result of viral infection. I say that with some misgiving because I know that the biopsy features of viral myocarditis are not very specific and also the man lost 12 kg in weight and I have not explained that.

PROFESSOR GOODWIN: Perhaps Dr Olsen will tell us about the biopsy.

DR E G J OLSEN (6): This biopsy was performed by Dr Oakley. The specimen was divided, as is the practice at Hammersmith Hospital, and most of the tissue went for biochemical analysis. Some went for virological studies and I was sent only a small sample. Because of the diagnostic importance we concentrated on histological examination rather than electron microscopy. There was no inflammatory infiltrate but the nuclei of the myocardial cells showed the features of hypertrophy. The diameter of the myocardial fibres was normal so there was a discrepancy between the nuclear changes of hypertrophy without increase in myocardial diameter. The reason is that the myocardial fibres were attenuated or stretched, as the result of dilatation of the chamber. There was only minimal increase in myocardial fibrous tissue.

There was therefore no evidence of present or past myocarditis. Unfortunately endocardium was not included in the biopsy specimen so I was not able to judge (from the smooth-muscle component) whether the dilatation had been present for any length of time. At the time we did a routine iron stain on all our biopsy specimens and there was no evidence of any iron deposition, as Professor Sleight asked (fig 8).



FIG 9—Macroscopic appearance of the heart showing dilated left ventricular chamber and cardiomegaly.

Microscopically there was an increase in fibrous tissue lying between the myocardial cells and this was so in both ventricles. The pericardium was infiltrated with lymphocytes and plasma cells and there were foci of lymphocytes subendocardially. The myocardium showed the features of muscle fibre hypertrophy, interstitial fibrosis, and mild lymphocytic infiltration, as seen in figs 10 and 11. There were also several small microhaemorrhages,

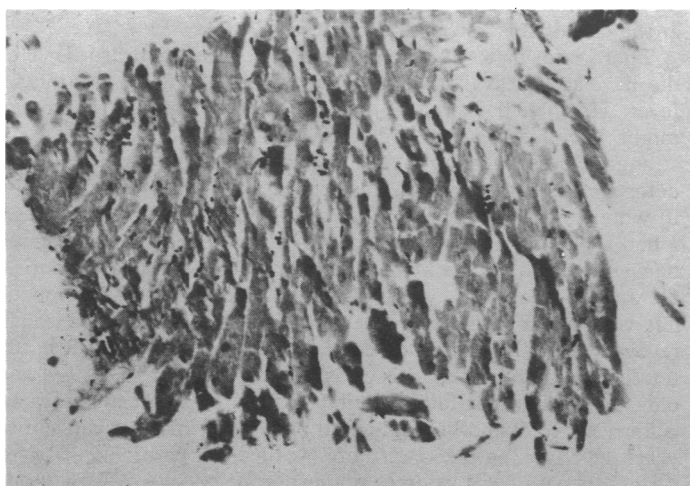


FIG 8—Photomicrograph showing regularly arranged myocardial fibres and showing evidence of hypertrophy. There is occasional minimal widening of interstitium, no increase in interstitial fibrous tissue, and no evidence of past or present myocarditis. Haematoxylin and eosin $\times 250$ (original magnification).

PROFESSOR GOODWIN: Will Dr Tarin give us the postmortem findings?

DR D TARIN (7): I am going to confine my remarks mainly to the lungs and the heart. The body weighed 64 kg and measured 176 cm and was rather wasted for its height. Externally there was sacral and ankle oedema. There was 100 ml of straw-coloured fluid in the pericardium and a similar right pleural effusion of about 300 ml.

The heart weighed 710 g—about twice its normal weight. The chambers were all grossly dilated but the left ventricular thickness was still 16 mm (the normal thickness is 15 mm) so there was pronounced left ventricular hypertrophy. The right ventricle was 7 mm thick so there was also some right ventricular hypertrophy. Fig 9 shows the heart opened up. The outflow tract showed no abnormality and the aortic valve was normal, as were the orifices of the coronary arteries. Careful examination of the coronary arteries revealed only one small patch of atheroma in the right coronary artery. A slice across the heart showed that there was no gross fibrosis, so there was no evidence of ischaemic heart disease, either in the coronary arteries or in the myocardium. There was adherent thrombus in the left atrial appendage.

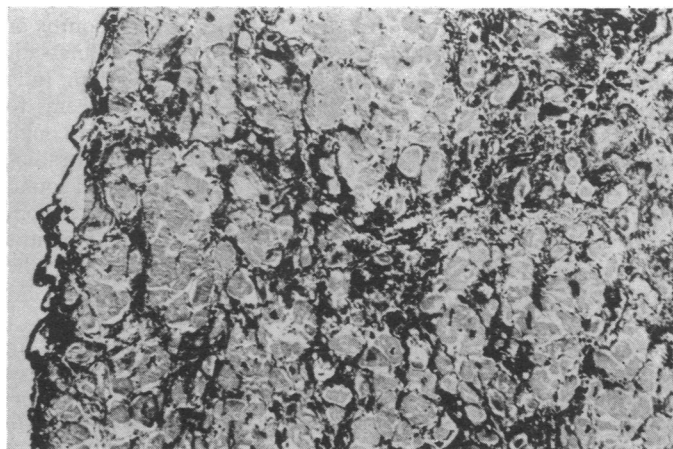


FIG 10—Histological section of myocardium showing interstitial fibrosis. Van Gieson's stain $\times 100$ (original magnification).

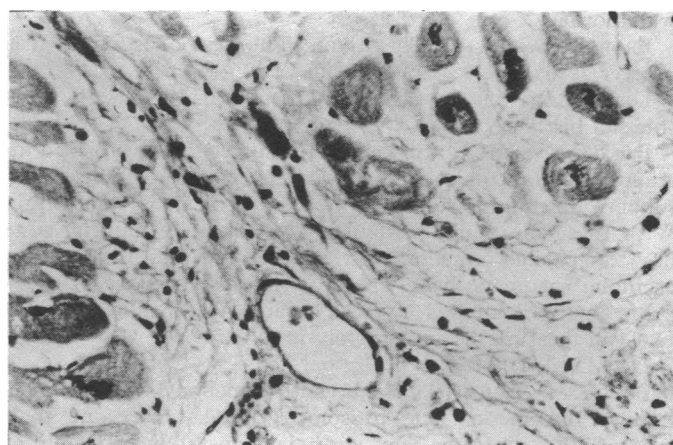


FIG 11—Histological section of myocardium showing hypertrophy of muscle fibres with enlarged hyperchromatic nuclei. A mild lymphocytic infiltrate is seen. Haematoxylin and eosin $\times 400$ (original magnification).

which were likely to have been caused by resuscitative measures. So these were the features of congestive cardiomyopathy together with what I will call chronic myocarditis.

Both lungs were heavy; the left weighed 740 g and the right 775 g, and there was pulmonary oedema and congestion. There were also small areas of consolidation in the lungs. The main interest microscopically, however, lay in the vessels, and the veins seem to have borne the brunt of the disease. Fig 12 shows a vein almost completely occluded by severe fibrosis of the media and intima. This change affected practically every small vein in the lung although the larger veins were not affected.



FIG 12—Detail of a pulmonary vein showing marked intimal fibrosis and luminal stenosis. Van Gieson's stain $\times 200$ (original magnification).

There was no evidence of previous arterialisatation of the veins—that is, there was no sign of any development of internal elastic laminae. This indicates that the vascular damage seen arose primarily in the veins of the lungs and was not secondary to raised pulmonary venous pressure due to heart failure or interstitial lung disease. This is consistent with the diagnosis of pulmonary veno-occlusive disease. Fig 13 shows the presence of IgM deposits in the walls of the veins as shown by the immunoperoxidase technique. These were patchy and not entirely surrounding the vein. There was no staining in the collagen of the pleura, which acts as an inbuilt control, excluding non-specific adherence of immunoglobulin to collagen. Finally, there was evidence of embolic disease in other organs, particularly in the spleen and the kidney. Pathologically, therefore, there was congestive cardiomyopathy, chronic myocarditis, systemic

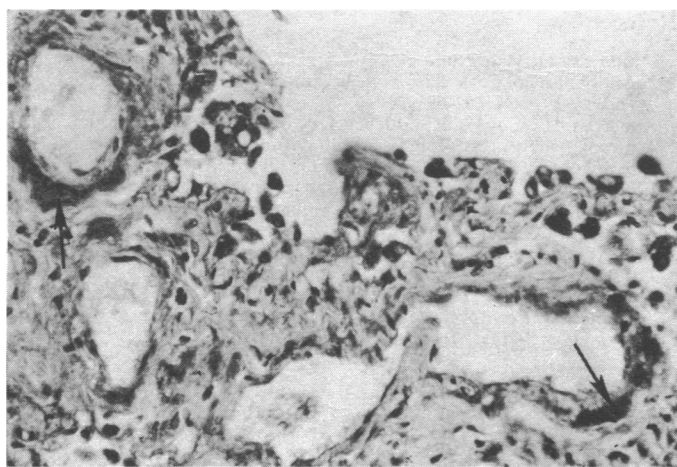


FIG 13—Pulmonary veins in a section stained to demonstrate the localisation of IgM with the immunoperoxidase technique. Deposits of immunoglobulin are seen in the walls of the vessels (arrow). $\times 400$ (original magnification).

embolic disease, pulmonary veno-occlusive disease, and bronchopneumonia.

PROFESSOR GOODWIN: So, Professor Sleight, your diagnosis was substantially correct, but I am surprised that you did not ask for any evidence of viral disease in life. But we do have some data which we might hear now from Professor Waterson.

PROFESSOR A P WATERSON (8): The patient died in September 1977, and neutralising antibody titres to Coxsackie B virus had been measured in April 1976 and also shortly before death. The highest titre in April 1976 was 1/1024 and this had fallen by the next year to 1/256. The general question which is posed by this particular patient is: Can acute infection of the heart by a virus, in particular Coxsackie B virus, lead to congestive cardiomyopathy? The number of patients who satisfy the cardiologists that they are suffering from congestive cardiomyopathy is very small, whereas the number of patients suffering from infections caused by the Coxsackie B viruses and their relations the echoviruses and polioviruses are relatively numerous, so one has to turn the question round and say: in patients with congestive cardiomyopathy is there any evidence retrospectively that the disease could have started with an acute Coxsackie B myocarditis? A series of 50 patients with congestive cardiomyopathy, and also 50 age- and sex-matched controls, were investigated for neutralising antibody to Coxsackie B virus.¹ This showed that nearly all those with the very high titres, that is, 1/1024 or greater, were in the congestive cardiomyopathy group and that the earlier you saw them the more likely you were to pick up the high titre—that is, there were more in the first six months than in the second six months. There was also an association with an acute febrile illness in the clinical history.

This does not prove the case, but it is *prima facie* evidence that Coxsackie B viruses may be associated with congestive cardiomyopathy and that this is worth investigating further. The possible explanations of these facts are: firstly, that it could be a chance association. Secondly, Coxsackie viruses might grow more easily in a heart that was already damaged by processes that we do not understand—that is, a "precongestive cardiomyopathy" heart might attract Coxsackie B viruses. Thirdly, there might have been a direct continuing slow infection by a Coxsackie B virus. Fourthly, and the most attractive possibility, the infection with the Coxsackie B virus might have initiated an immunological abnormality or exposed an immunological weakness and led on to progressive cardiac failure. There are in fact two pieces of evidence for an abnormality of cellular immunity in patients with cardiomyopathy. This comes from a large series of heart transplants at Stanford.²

Of 37 patients transplanted because of congestive cardiomyopathy, seven eventually developed a lymphoma. Of the 54 transplanted for ischaemic heart disease, none developed lymphoma. Secondly, also at Stanford, patients with congestive cardiomyopathy have been found to have a failure of T-cell suppressor function, which is not seen in the case of those with ischaemic disease. The question we should be asking is, assuming there is an association with Coxsackie B virus in the past and assuming that there is an initial abnormality of T-cell suppressors, Is this disturbance of cell-mediated immunity a primary abnormality or is it effective only if a second cause is superimposed on it, which may be a Coxsackie B virus infection? At this point I am happy to hand over to my immunological colleague Dr Agnarsdottir to comment on the last point.

DR G AGNARSDOTTIR (9): I want to comment on the lack of suppressor cell activity which Professor Waterson has referred to. Fowles and his colleagues³ in California found that 18 patients with idiopathic congestive cardiomyopathy showed a lack of in-vitro mitogen-induced suppressor cell activity when compared with eight patients with coronary artery disease and 16 normal individuals.

It might be helpful to discuss briefly what is known about suppressor cells and their function. Before precursor B cells leaving the bone marrow can become active antibody-producing plasma cells they require, in most instances, help from a subpopulation of T lymphocytes called helper cells. This help is

counterbalanced by another subpopulation of T lymphocytes which suppress or inhibit antibody production and have been called suppressor cells. The interaction between these two cell types helps to tune and control the relevant immune response. Suppressor cells are believed to consist of heterogeneous populations of cells and have been found to suppress both responses to specific antigens and mitogen responses *in vitro*. They are believed to play an active part, not only in primary and secondary antibody production but also in cellular immune and allograft responses as well as in tumour immunity. Their physiological role may be to help to maintain self-tolerance and to prevent excessive antibody or cellular immune responses, particularly in cases when antigen persists.

Malfunction of suppressor cells has been found in association with disease in both animals and man. Hyperactivity of suppressor cells has been shown in common variable hypogammaglobulinaemia and selective IgA deficiency in man. More relevant to the case in question, lack of suppressor cell activity has been found in various autoimmune disorders, as well as in cases of malignant proliferation of immunocytes. Decreasing suppressor cell function is also found with advancing age.

It is not possible to say whether this defect of suppressor cell function in idiopathic congestive cardiomyopathy is a consequence of or whether it predisposes to the development of the disease. Moreover, we are left to speculate whether the increased titres of Cocksackie B antibodies are partly caused by lack of suppressor cell activity.

PROFESSOR GOODWIN: I would now like to ask Professor Sleight what he feels having heard this discussion.

PROFESSOR SLEIGHT: Well, there are several things that I left out at my discussion. I wish I'd remembered to mention the T-suppressor cells but they are a bit rarified for a poor cardiologist. I had in fact heard of it from someone who wanted to survey all our cases and I think it is a very interesting finding. I do not see how I could have picked up the veno-occlusive disease: his wedge pressure was not disproportionate to the left ventricular end diastolic pressure and his chest radiograph did not look particularly congested.

I was very interested in the virology. We perform biopsies only if we have done all the investigations, including cardiac catheterisation, and still have no idea of what is going on; we have a series of about 80 biopsy examinations. We have performed virological studies on all these specimens and have drawn a complete blank. We have also measured blood virus titres but did not get the proportion that you got.

PROFESSOR GOODWIN: I would like to ask Professor Grist just to comment on the virus studies as he has been working on them for years.

PROFESSOR N R GRIST (10): We've been taking a pretty simple approach to this. One is, of course, limited because one cannot usually look for the virus while it is active in the heart so we have done most of our work on the easiest antibody to test for—the Cocksackie B virus antibody. At first we did not think of Cocksackie viral heart disease as anything very common but as the years went on we came across it more and more often. The present patient's antibody titre of 1/1024 in April 1976 was unusually high by our criteria, suggesting recent infection with Cocksackie B virus. Arboviruses are, on a world scale, another rather prevalent lot of viruses which cause fever, muscle pain, and sometimes myocarditis and pericarditis. Finally, it looks to me as though we have a small group of people who respond to these infections in a different way from most of the population, and maybe this links in with the immunology.

PROFESSOR GOODWIN: Dr Spiro, would you like to comment on the veno-occlusive disease?

DR S G SPIRO (11): My comments are more from the respiratory point of view. Pulmonary veno-occlusive disease was a surprising finding in this case and I do not think there was any way one could have predicted it. I have seen the occasional case of veno-occlusive disease present with progressive breathlessness, syncopal attacks, and right heart failure. The clues have been

the presence of clinical and radiological pulmonary hypertension and the presence of Kerley B lines on the chest radiograph. In one case there was an excellent response to treatment with azathioprine. I do not see how it could have been readily associated with the congestive cardiomyopathy in this case.

DR B CORRIN (12): With regard to the aetiology it has been suggested for some time that veno-occlusive disease might have an infective cause and I am reminded of the case published by Wagenvoort⁴ of a baby who died at the age of 2 months with veno-occlusive disease, interstitial pneumonia, and subacute myocarditis. The mother was thought to have had a viral illness during pregnancy and the baby's disease was ascribed to intrauterine infection. Pulmonary veno-occlusive disease is thought to be a thrombotic process and the multiple lumens in the intimal fibrous tissue suggest recanalisation of old thrombus. Very occasionally there is evidence that the process is mediated by immune complexes.⁵

PROFESSOR GOODWIN: What intrigued me was the discrepancy between the biopsy findings and the findings at necropsy.

PROFESSOR SLEIGHT: I learnt to do biopsies in Japan quite casually and brought a biopsy instrument back with me. It has jaws which take a bite, which, as Dr Olsen said, is not very satisfying for the pathologist; I have had the same experience of taking a biopsy specimen which was completely normal but the subsequent necropsy showed a good deal of fibrosis in the left ventricle.

DR OLSEN: We have found that if we take six biopsy specimens the correlation with the postmortem findings is very good. We have now performed such biopsies in 650 cases and only occasionally has there been divergence at necropsy.

DR C M OAKLEY (13): There were not all that many inflammatory cells in the heart, even at necropsy, and we had a lot of discussion as to whether they were indeed relevant; we were not convinced that the cells were causally related to his illness, although, of course, he may have had an incidental infection.

DR TARIN: I think Dr Oakley has put her finger on the knob of the question. There were undoubtedly inflammatory cells in the heart. Whether they were responsible for the congestive cardiomyopathy is a question that it is impossible to come to any firm conclusion about on the basis of one case. But we have now collected two further cases in which the three factors were associated—that is, raised Cocksackie B virus titres, chronic inflammatory cells in the myocardium, and congestive cardiomyopathy. I would like to add that there is no recorded association between congestive cardiomyopathy and veno-occlusive disease, which incidentally was not to be explained on the basis of chronic heart failure.

PROFESSOR GOODWIN: Thank you very much.

This conference was recorded and edited by Dr W F Whimster.

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Appointments of speakers

- (1) Professor J F Goodwin, MD, FRCP, professor of clinical cardiology, Royal Postgraduate Medical School, London W12 0HS

- (2) Dr C G C MacArthur, MB, MRCP, honorary senior registrar in cardiology, Hammersmith Hospital, London W12 0HS
- (3) Professor R E Steiner, MD, FRCR, professor of diagnostic radiology, Royal Postgraduate Medical School, London W12 0HS
- (4) Professor P Sleight, DM, FRCP, Field Marshal Alexander professor of cardiovascular medicine, John Radcliffe Hospital, Oxford
- (5) Dr E S Sherwood Jones, FRCP, DTM&H, consultant physician, Whiston Hospital, Prescot, Merseyside L35 5DR
- (6) Dr E G J Olsen, MD, FRCPATH, consultant pathologist, National Heart Hospital, London W1
- (7) Dr D Tarin, DM, MRCPATH, senior lecturer in histopathology, Royal Postgraduate Medical School, London W12 0HS
- (8) Professor A P Waterson, MD, FRCPATH, professor of virology, Royal Postgraduate Medical School, London W12 0HS
- (9) Dr G Agnarsdottir, CAND MED ET CHIR, senior registrar, Department of Virology, Royal Postgraduate Medical School, London W12 0HS
- (10) Professor N R Grist, FRCP, FRCPATH, professor of infectious diseases, University of Glasgow
- (11) Dr S G Spiro, MD, MRCP, consultant physician in thoracic medicine, Brompton Hospital, London SW3 6HP
- (12) Dr B Corrin, MD, FRCPATH, reader and honorary consultant in pathology, St Thomas's Hospital, London SE1 7EH
- (13) Dr C M Oakley, MD, FRCP, consultant cardiologist, Hammersmith Hospital, London W12 0HS

MATERIA NON MEDICA

Public launch

A street explosion in a seaside town—surely not a bomb or a gun, and hardly loud enough for a gas-stove. Holidaymaking and uninterested, I wander into Boots, and it happens again: a sharp slap, like a packing-case falling on the road. Shoppers look round with frowns, amusement, or unconcern, and the pharmacist appears from his sanctum. He says, "Two flares—the lifeboat," gazes at the cloudless sky, and fades again behind his bottles.

The Friday crowds move fractionally faster as we loafers are drawn to the harbour. The tide is out and silent watchers throng the harbour wall as the little blue-and-white boat is towed on a trolley across the sand by a caterpillared tractor. It turns and pauses by the water's edge while half a dozen men in orange oilskins climb aboard by ladder. The tractor reverses far into the sea and with a jerk the boat is off, sitting low in the water and moving out quickly over a flat calm. The crowd of spectators sighs and starts to disperse. My son climbs down from my shoulders and I notice there was no rail at the edge of the quay. A man with dyed hair and binoculars says, "A light aircraft come down—didn't you see the Nimrod?"

The icecream man by the lifeboat station glows with reflected glory. "We got the message at ten to three. Ship in trouble seven miles out, so they needed the big boat. The inshore boat can hit the water in a minute flat." Inside the lifeboat shed are displays of dog-eared pictures—stolid former coxswains, wrecks, and a launching in earlier days with teams of men instead of a tractor. A bored man in gumboots is hosing things down, and a three-wheeled car with an RNLI sticker sits outside. Everyone is matter-of-fact, selfconsciously immune to the admiration of tourists: there must be many like me who, even on a sunny day, get a lump in the throat with memories of tragic headlines—of fishing hamlets decimated by this cool unsalaried heroism. I notice that the collecting box is padded inside, so that my loose change doesn't even rattle.—JAMES OWEN DRIFF (senior lecturer in obstetrics and gynaecology, Bristol).

Bibalnti and Mpag

Samos last summer had a lot to give—sea and sun, temperatures of 38°C, fresh fish by the harbour, friendliness, and peace. It gave something more, a sense of antiquity that pervaded everything about us, shown in its most solid form by the three "wonders" built in the fifth century BC by the tyrant Polycrates: the towering almost monolithic walls high above the modern town, the harbour mole nearly a third of a mile long, and the unique Eupalineion—an "aqueduct" bored as a tunnel for over a kilometre sheer through the hills, and through which one can still walk—not us though, our claustrophobia was showing that day. Moreover, there is a fourth relic—the ancient theatre. It does not have the power perhaps of Epidauros nor the marble. The banks of seating are broken and rough, but the view, the ambience, the feeling of the past are all strong around one. So we sat, on a June evening, awaiting the first performance in that auditorium for probably 1500 years. This was a concert given by the Youth Orchestra of Athens, and the works included pieces by the gentlemen indicated by the transliterations of my title—Greek capitals have a charm of their own.

The town crier had advertised the event, and an audience of several hundred had collected, if not by the indicated time, within half an hour or so. We were strengthened by about 50 Greek naval ratings (volunteers or pressed men we never discovered, but they all listened with rapt attention) and most of the town council; this led to a prologue and aftermath of speeches, but no matter, we basked in the evening heat and Greekness of it all. Naturally the cicadas did not desert us, and Bach's "Air on a G String" had an obbligato part quite new to your pampered English ear. No such luxury as chairs or cushions; scanty grass or suitably shaped rocks were our lot. Our backrest was an ancient olive tree, and stems of asphodel and agave provided vertical contrast and a frame for the back drop—a view over town, fortress, and harbour (from which came the faint strains of a brass band), and then the blue Aegean Sea. Homer, Polycrates, triremes—all one's legacy from the classical ages made music of the recent centuries seem strangely fuzzy at the edges. We have been to the Festival Hall since—it did not feel quite the same as heretofore. Samos—why did we ever leave?—D G WILSON (general practitioner, Bushey, Herts).

A brown bag affair

When I was in Ann Arbor recently, I was asked to address a postgraduate medical group. Although hardly prepared, I accepted the invitation with that mixture of apprehension and pleasure which is my standard reaction to such unexpected requests. The time of the proposed lecture—12.30 until 2 pm—puzzled me slightly. When I inquired I was told it would be a "brown bag" affair. On further questioning it was explained to me that the audience would turn up with brown paper bags, inside which would be their lunches. They would eat as I talked. This was something new to me but, nothing daunted, I prepared my presentation.

The fairly large gathering were as polite as only Americans can be to a stranger and most came on time. On looking around I noticed that almost everyone had, indeed, a large brown paper bag and it was with interest that I watched the various contents emerge. Soup and Chinese food in thermal containers, hamburgers, salads, sandwiches, and soft drinks of all kinds—and lots of yoghurt. Coffee was on the house. For the first time I experienced a new sensation while delivering a lecture—acute hunger. Time and again my attention strayed to a succulent rye bread sandwich or a rich Danish pastry and my observations began to be punctuated by rumbles from the lower abdomen. The use of food to emphasise a point was also something I learnt that day. A hot dog stabbed into the air is a devastating exclamation mark; and the pause to chew a morsel of food reflectively before replying to a point can be equally disconcerting. The audience always seemed to have an unfair advantage.

Later, when enjoying a much-needed meal with my chairman and host, I gave some thought to the system. It kept the group up to date; it was a sure way of collecting them together; it certainly made the speaker stick to his time; it sharpened his wits by stimulating his gastric juices; and it was an effective way of using scarce professional time. I am thinking of trying it out in our own postgraduate centre but I have the feeling that the usual British diet will defeat even the strongest brown bag.—WILLIAM THOMSON (chief administrative medical officer, Lanarkshire).