



The forgotten past: The practice of cardiology in the 1950s and now

*'Bliss it was in that dawn to be alive,
But to be young was very heaven'*
Wordsworth. *The Prelude*

The 1950s must seem like the Dark Ages to the 21st century cardiologist. No echocardiography or nuclear imaging, no coronary care, no coronary angiography, no angioplasty, no pacemakers, no coronary surgery. Surely, it must have been a most depressing time to practise the specialty? On the contrary, it could hardly have been more exciting. The spectrum of disease seen by the young cardiologist was far wider than it is today, and both diagnosis and treatment were advancing at a remarkable pace. Whilst one might be accused of hyperbole in quoting a Wordsworth poem that eulogized the French revolution, those of us entering cardiology at the time knew that we were witnessing the dawn of a new era.

It is instructive to compare the American and European journals of the time and of today. For example, if we look at the *British Heart Journal* of 1955, 11 of 38 original articles were on congenital heart disease, and a further eight on rheumatic or valvular heart disease. There were no articles on the clinical management of coronary heart disease or heart failure. By comparison, of 37 original articles in the *European Heart Journal* in the first 3 months of 2000, there were no articles on congenital or valvular heart disease, but 22 related to coronary heart disease and/or heart failure. Of course, journals mainly report on the topics that inspire research, but tell us little about contemporary practice. Textbooks of the time, which have been recently well reviewed by Silverman^[1] are, perhaps, the best source of information about contemporaneous cardiology. In the 1950s, these were mostly written by single authors of Olympian stature, such as Paul Dudley White^[2] and Paul Wood^[3]. However, these books told us what they thought we ought to do, but do not necessarily describe what we did. A less elevated view of the topic can be obtained by making use of the unreliable memories and limited perspectives of survivors from that era. This paper will reflect the experience of one who was training during this period in Liverpool, Edinburgh, the National Heart Hospital, London, and the Peter Bent Brigham

Hospital, Boston, with a short period in the Tenon and Lariboisière Hospitals in Paris.

Cardiac diagnosis

At the beginning of the 1950s, diagnosis depended largely upon good history taking, a careful physical examination, the newly introduced 12-lead electrocardiogram, and radiological examination by both straight X-rays and fluoroscopy. But ECGs were often recorded photographically, so that they had to be developed in a dark room, and were not always available in an emergency. Young cardiologists would spend hours each day reporting on ECGs and great emphasis was placed on such things as rotation of the heart, axis deviation and the choice of leads. Fluoroscopy was very popular and, in many clinics, was applied to all patients. This was of considerable value in visualizing the hilar dance of an atrial septal defect, the calcified pericardium or aortic valve, and, with a barium swallow, the enlarged left atrium of mitral stenosis.

Cardiac catheterization was in its infancy, and for most of the decade involved only the right heart, although various methods of left heart investigation, such as direct left ventricular puncture, transbronchial left atrial puncture and the transeptal approach were being introduced. The development of the Seldinger technique greatly accelerated the use of retrograde arterial catheterization.

Young doctors spent an enormous amount of time doing tasks, such as urine testing, measuring haemoglobin levels, estimating blood gases with a Van Slyke machine, and manipulating the taps in the catheter laboratory. There were few technicians available and the responsibilities that nurses now take in their stride were regarded as highly improper for them.

Cardiac surgery

Great advances in cardiac surgery took place in this decade. Surgery for coarctation, persistent ductus arteriosus, Fallot's tetralogy and mitral stenosis had already been established in the 1940s. A

breakthrough was the first open-heart operation in 1953. Initially, the mortality was high, even in the most famous hands, but fell rapidly within a few years.

Rheumatic heart disease

Chronic rheumatic heart disease was the major pre-occupation of the practising cardiologist. Rheumatic fever had peaked in the 1920s and 1930s; indeed in 1927 the British Medical Research Council reported that 10 to 15% of all children in the country had been affected by rheumatism^[4]. There were still many cases of acute rheumatism occurring in the 1950s, enough to keep a hospital devoted to this disorder (the Canadian Red Cross Hospital, Taplow, England) busy. One thousand patients with acute rheumatic fever were admitted to this hospital between 1947 and 1955. In 1978, only one such patient was admitted.

However, it was the long-term sequelae of acute rheumatism that were the chief concern of cardiologists of the 1950s. Although mitral regurgitation (often referred to as incompetence or insufficiency) was the commonest lesion^[3], it was the devastating effect of mitral stenosis in young women in their 30s and 40s that attracted most attention. It was reported that there were 1.5 million Americans with this condition. Mitral valvotomy had been introduced by Bailey and Harken in the United States and by Brock in London in the late 1940s. Soon the operation had been adopted throughout the developed world. The accurate diagnosis of mitral stenosis was an area of intense research, with the interest in its physical signs being a focus in France and Britain, and findings at catheterization being the dominant theme in the United States. Both approaches were, of course, necessary for catheterization was invaluable in assessing the severity of the lesion, but physical signs were paramount when it came to evaluating the pliancy of the valve, an essential prerequisite for the successful valvotomy. The first open mitral valve repair operations were undertaken in 1957.

Aortic valve disease often accompanied mitral stenosis, but was less amenable to surgery, although success had been achieved by aortic valvotomy, albeit with a high mortality. The first artificial aortic valve prosthesis was inserted in 1958.

Pregnancy

Heart disease in pregnancy was a major problem, justifying weekly cardiological clinics in the maternity hospitals of both Edinburgh and Boston. Although benign systolic murmurs were the most frequent

reason for referral, mitral stenosis was the commonest organic lesion and, in many cases, quite severe. Assessing the right time for surgery was difficult because the physical signs in the pregnant woman were often misleading, and one was reluctant to undertake not only cardiac catheterization and surgery at this time, but also simple X-rays. There was a vogue for 'prophylactic' mitral valvotomy to avoid this situation.

Previously undiagnosed heart disease was not rare. Congenital lesions such as coarctation and atrial septal defect would be seen several times a year in these clinics — their diagnosis being particularly difficult in the pregnant woman.

Syphilitic heart disease

Tertiary syphilis was becoming rarer, but according to Wood, it was the commonest cause of isolated aortic regurgitation. Woe betide the resident who did not do a Wassermann reaction in all such patients! Penicillin was introduced for treatment in the 1940s, but had little or no effect on the established disease. Surgery had not yet arrived, except for a few cases of aneurysm.

Infective endocarditis

Because of the frequency of valve and congenital disease, infective endocarditis was quite common and provided a treasure trove of physical signs beloved of examiners. Fear of this complication led some cardiologists, very aware of its usual dental origin, to recommend complete tooth extraction in all their patients at risk. Most cases were due to *Streptococcus viridans* and could be cured by penicillin therapy. It was widely accepted that the intramuscular injections had to be given 3 hourly for 6 weeks.

Hypertension

There were widely discrepant views as to the importance or otherwise of hypertension as a cause of heart disease and heart failure. While it was generally recognised that malignant hypertension warranted treatment with the drugs such as hexamethonium that were then available, their use was difficult and often unpleasant for the patient. Only diastolic hypertension was considered important, systolic

hypertension being regarded simply as evidence of hardened vessels.

Coronary heart disease

The mortality from coronary heart disease was rising sharply in developed countries throughout the decade. A study by Russell and Ryle had shown that physicians and surgeons had the highest standardized mortality rate (SMR) at 368, whereas chemical workers had an SMR of 20. Not surprisingly, this appalling figure was attributed to stress. Can the current low SMR of physicians be due to low levels of stress today?

Most cases of coronary heart disease were cared for by general physicians and the disorder was not of particular interest to most cardiologists, except as a source of income in private practice.

The diagnosis of angina depended essentially on the history. The resting ECG was regarded as potentially misleading. Effort tests such as that pioneered by Master, were gentle — for example walking up and down two steps and obtaining a recording shortly afterwards. The test was regarded as positive if downward sloping of the ST segment occurred, but failure to show change did not exclude the diagnosis. Coronary angiography had not become available.

'Coronary thrombosis' was often cared for at home, but in some areas anticoagulation had become routine and required hospital admission. Patients were looked after in general medical wards and the condition was not considered an emergency. Residents might not even see 'another coronary' admitted during the night until the following morning, although they might sign a prescription for morphine from their beds. Even though Samuel Levine^[5] in Boston had pioneered the 'arm chair' treatment of heart attacks in 1951, Paul Wood was to write in 1959 'Patients should be confined to bed at once and should remain there for three to six weeks or longer'. Drug therapy was confined to pain relief and anticoagulants, with mercurial diuretics for heart failure, and noradrenaline for shock. The in-hospital mortality was in the region of 25–30%.

Heart failure

Virtually the only treatment for heart failure at the beginning of the decade was the use of injected mercurial diuretics, although primitive treatment with Southey's tubes for intractable oedema was also in use. The arrival of chlorothiazide and spironolactone

in the latter part of the 1950s transformed its management.

Arrhythmias and conduction disorders

Atrial fibrillation attracted most attention, and was treated by digitalization and quinidine therapy. Electrical cardioversion had to wait until the next decade. Although heart block was very familiar to cardiologists, treatment was mainly with the relatively ineffective and potentially hazardous oral isoprenaline. However, Zoll pioneered transthoracic pacing in 1952, and pacing by an intracardiac electrode was developed in the late 1950s.

In 1956, Zoll also pioneered the transthoracic defibrillator. This was an essential component of closed chest cardiac resuscitation that was being developed by Kouwenhoven and his colleagues at the Johns Hopkins Hospital at this time.

In retrospect

Young cardiologists at the beginning of the 21st century must think that their predecessors in the 1950s were frustrated diagnostically and impotent therapeutically. In fact, it was a remarkably exciting era. The linking of physical signs to pathophysiology had led to the fine tuning of the skills of inspection, palpation and auscultation. The ability to use all one's talents to diagnose cases of rheumatic and congenital heart disease was a fascinating challenge. Surgery was curing or alleviating the commonest manifestations of congenital heart disease, and open heart surgery had arrived with the prospect of major advances in the treatment of all forms of valvular heart disease.

Unlike today, where diagnosis and management is largely confined to the assessment and therapy of a single pathological entity in the relatively elderly, there were numerous conditions to be diagnosed and treated in patients who ranged in age from the neonate to the geriatric.

In 1956, when I was working at the National Heart Hospital in London, the Professor of Medicine in my old medical school advised me not to pursue a career in cardiology. He saw little future in it as 'all the mitrals had been operated upon'. This advice has discouraged me from offering advice to the aspiring potential cardiologist since. It is easy to be pessimistic about the future of cardiology as a specialty. The real challenge today is the prevention of coronary disease, hypertension, diabetes and cardiomyopathy, but is this the job of the geneticist, the lipidologist or

nutritionist rather than the cardiologist? Are not nurses the best people to supervise the management of heart failure? Only time will show. For the foreseeable future, there is certainly going to be a lot of cardiological work to be done, as the prevalence of coronary disease and heart failure in the elderly is actually increasing. I do not think the cardiologists training at the moment need to be too concerned about being unemployed, but perhaps they should keep their options open!

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References

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