Infective endocarditis – new guidance recommends a more aggressive approach

Martin R Cowie

Sir William Osler delivered his now famous Gulstonian lectures on endocarditis at the Royal College of Physicians in London in 1885,[1] and later gave his name to one of the rarer clinical signs found in this disease. The management of infection on heart valves or other endocardial surfaces of the heart remains a challenge. Fortunately a relatively rare condition in the general population (perhaps four cases per 100,000 per year), it is more common in patients with congenital heart disease and heart valve abnormalities – particularly those who have a prosthetic valve. Delay in diagnosis and treatment can be fatal.

The guidance on the prophylaxis and treatment of infective endocarditis (IE) in adults published in this edition of *Clinical Medicine* is, therefore, welcome.[2] The strength of the evidence on which the recommendations are based is weaker than for many other cardiovascular diseases – heavy reliance has to be placed on extrapolation by experts from case reports, case series, and animal experiments, rather than from randomised trials. Under such circumstances, it is perhaps not surprising that this guideline makes some recommendations at odds with previous guidelines, including those of the British Society for Antimicrobial Chemotherapy (1993)[3] and the American Heart Association (1997, 1998),[4,5] and with the recent guideline from the European Society of Cardiology (2004).[6]

Expansion and strengthening of the evidence base by the setting up of registries and randomised trials of therapeutic treatment strategies is essential. The International Collaboration on Endocarditis (ICE) is one attempt to form a professional network to advance the understanding of endocarditis, and to facilitate a more global view of the disease.

Nevertheless, the multi-professional advisory group is to be congratulated on drawing together the current evidence and translating this into clear and specific recommendations on which to base our practice. Compared with previous national and international guidelines, this document takes a much more aggressive approach to the prevention and treatment of IE. It therefore has major implications for day-to-day practice.

One of the key recommendations of this guideline is that the optimal management of IE requires close collaboration among specialists in cardiology, cardiac surgery and microbiology. Few clinicians will have extensive personal experience of treating this condition; sound clinical judgment is essential and requires close and frequent consultation between the different specialists. It is likely that expertise may have to be sought from tertiary referral centres and those with a particular interest and expertise in this condition. This advice should be sought sooner rather than later.

A high index of suspicion of the diagnosis is required as most organ systems can be affected and the presentation may be to doctors in several specialties. The modified Duke criteria[7] form the basis of the diagnosis, with blood cultures, echocardiography and, on occasion, serology being the most important. The recommendation is that a patient should be admitted to hospital when the diagnosis of IE is suspected. Repeat blood cultures should be taken, along with baseline electrocardiogram, chest radiograph, full blood count, serum biochemistry, and inflammatory indices. Transthoracic echocardiography should also be performed. If the image quality is poor, vegetations are suspected, or a valve abnormality seen, then a transoesophageal echocardiogram should be performed. The latter investigation is also mandated if there is a suspicion of prosthetic valve endocarditis. As soon as the diagnosis is confirmed by blood culture, a cardiologist and microbiologist should be involved – although in most UK hospitals access to transoesophageal echocardiography requires referral to a cardiologist in any case.

Microbiological expertise is essential throughout the management of this condition. Identification of the responsible organism and selection of appropriate combination antimicrobial therapy is the mainstay of medical management. Monitoring of the course of treatment may also be tricky. It should be remembered that antimicrobial therapy is not without its own complications – including nephrotoxicity, ototoxicity, and immune reaction. Treatment of culture-negative endocarditis is likely to be particularly difficult. In contrast to previous guidelines, prolonged intravenous antibiotic therapy (six weeks) is recommended for all cases except the most sensitive streptococci.

Martin R Cowie
MD MSc(Epid) FRCP,
Professor of Cardiology,
National Heart & Lung Institute,
Imperial College,
London; Chairman,
Clinical Practice Committee,
British Cardiac Society

Clin Med
2004;**4**:489–90

The need for, and timing of, cardiac surgery is a particularly difficult issue – some 25–50% of patients will require cardiac surgery at some point, usually to repair damaged valve structures (which may lead to progressive cardiac failure) or to prevent embolic complications. Successful management of perivalvular abscesses and prosthetic valve infection is likely to require radical resection of infected tissue followed by reconstructive procedures that require high levels of surgical expertise. Early consultation with a cardiac surgeon is recommended in haemodynamically stable patients 'in case surgery is suddenly required'. Patients with life-threatening heart failure or cardiogenic shock due to treatable valvular disease should be considered for emergency (and inevitably high risk) cardiac surgery. If adopted, such recommendations are likely to increase the involvement of cardiac surgeons in the management of patients with IE, and necessitate closer working between tertiary centres and district general hospitals.

The new recommendations on prophylaxis of IE are markedly different from previous advice. Some may argue that they lengthen the list of procedures that require prophylaxis in patients at moderate-to-high risk of IE excessively; the following are now included:

- transoesophageal echocardiography
- upper gastrointestinal endoscopy (with or without biopsy)
- cervical smears
- percutaneous transluminal coronary angioplasty (with or without stenting)
- acupuncture.

This is based on expert interpretation of data on the risk of bacteraemia after these procedures, the likelihood that the circulating organisms may cause endocarditis, and the efficacy of prophylactic antimicrobial therapy. The number of reported cases of IE related to these procedures is very small, but the authors argue that IE is such a serious condition that little risk should be taken. On the other hand, more widespread use of antimicrobial therapy is not without risk for the individual or the community. Helpfully, the guideline provides an extensive list of modern dental procedures which do, and do not, require prophylaxis.

The new guideline on the prophylaxis and treatment of IE deserves to be disseminated widely. It mandates a more aggressive approach than has been customary, certainly in the UK. All physicians should read the recommended list of cardiac conditions and procedures for which prophylaxis is recommended, and ensure that systems are in place to ensure this happens in their area of responsibility. A patient with a diagnosis of IE should have expert input from a range of specialists, including a cardiologist, microbiologist, and cardiac surgeon, and at as early a stage as possible. It is believed that this more aggressive approach will reduce the substantial morbidity and mortality from this fortunately uncommon condition. International collaborative efforts should also be encouraged to ensure that future guideline developers have the benefit of a more robust evidence base.

The full version of the guideline, including an extensive list of references, is available on the British Cardiac Society website (www.bcs.com), and on the Royal College of Physicians website (www.rcplondon.ac.uk).

References

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