Changing patterns in epidemiological profiles and prevention strategies in infective endocarditis: from teeth to healthcare-related infection

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This editorial refers to 'Health care exposure and age in infective endocarditis: results of a contemporary population-based profile of 1536 patients in Australia', by R.W. Sy and L. Kritharides on page 1890

Although the global incidence of infective endocarditis (IE) has not changed, considerable epidemiological modifications have occurred during the last few years. In industrialized countries, the typical pattern of IE is now an elderly patient with a degenerative heart valve disease or with a prosthetic valve or an intracardiac device such as a pacemaker or defibrillator leads. Major changes have occurred in the mode of acquisition of IE and its microbiological profile. Staphylococci have emerged as major causes of IE, probably because of an increasing rate of healthcare-associated bloodstream infections, representing up to 30% of all cases of IE in developed countries.2–4 Healthcare-associated IE (HAIE) comprises not only cases acquired in the hospital (nosocomial) but also cases that develop outside the hospital (non-nosocomial) in patients with extensive healthcare contact (e.g. in day care hospitals, dialysis centres, out-patient parenteral antibiotic therapy programmes, and nursing homes).2,5–7 This recently described category represents up to half of all HAIE in previous contemporary cohort studies.5,8,9 A recent large multicentre cohort series analysed the characteristics and the outcome of 557 patients with HAIE.5 This study confirmed the high (34%) incidence of HAIE, including 46% of non-nosocomial HAIE. As compared with community-acquired IE, HAIE presented with a higher incidence of Staphylococcus aureus infection, a higher proportion of patients with methicillin-resistant S. aureus (MRSA), less frequent surgical therapy, and higher mortality. Although this work added important data to the knowledge of HAIE, it suffered from a referral bias and the inability to define the true incidence of the disease, since data were collected only in medical centres which accepted to take part in the study.

Sy and Kritharides have now investigated the characteristics of non-nosocomial HAIE in a large contemporary Australian series of >1500 patients with IE diagnosed between 2000 and 2006.10 The main strength of this work is the population-based study design used, allowing a more accurate estimation of the true incidence of the disease than in previous series. Regarding the incidence of IE in Australia, the reported rates were similar to those from other recent epidemiological studies from other countries, and the male predominance was confirmed. Other important findings were the temporal trend to an increase of mean age of the patients experiencing IE, and the high in-hospital mortality whose rate was still higher than 10% despite a surprising very low rate of surgical treatment (20%). Non-nosocomial HAIE accounted for 30% of all IE, representing an average annual incidence of 1.5 per 100,000. Older age, co-morbidities such as diabetes, and chronic renal impairment were factors significantly associated with HAIE. Moreover, MRSA and enterococci were more frequently identified in this category of IE. Finally, this study confirmed the worse prognosis of HAIE as compared with community-acquired IE, since HAIE was identified as an independent predictor of death.

The main limitation of the study of Sy and Kritharides is that they did not include in their study inpatient nosocomial episodes of HAIE and patients who developed IE after home-based nursing or intravenous therapy, thus probably causing underestimation of the true incidence of the disease. The authors chose a definition of HAIE that differs from that initially proposed by Friedman et al.2 and accepted by the current international guidelines.6 Effort should be made to use a consensual definition, for both its epidemiological consequences (incidence of the disease) and its potential impact on the therapeutic strategies, particularly on the choice of empirical antibiotic therapy.

The second limitation of the study is that it is limited to an Australian population and the conclusion cannot be extended to other countries. The incidence of HAIE differs from country to country.
country. Fowler et al. reported regional differences in the incidence of S. aureus healthcare-associated infective endocarditis, the proportion of MRSA, and the at-risk procedures. In the USA, non-nosocomial HAIE represents ~30% of all native valve IE, and this result is probably related to the growing importance of outpatient medical therapy and the increasing number of patients receiving haemodialysis.

However, the main finding of this and other recent studies is the growing frequency and high mortality rate of healthcare-associated valve endocarditis. This important epidemiological change should have direct consequences on our understanding of the prevention of IE. As IE epidemiology is changing, the preventive strategies against IE must change as well. We are now moving from a prophylactic strategy against streptococcal bacteraemia during dental procedures at risk to a more global prevention of IE, including education of doctors and nurses to reduce the incidence of HAIE. Recent ESC guidelines underline the crucial importance of aseptic measures during venous catheter manipulation and during any invasive procedures in order to reduce the rate of HAIE.

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References