Scientific letters

Knowledge of Infective Endocarditis and Prophylaxis Among Spanish Dentists

Grado de conocimiento de la profilaxis de endocarditis infecciosa entre los dentistas españoles

To the Editor,

The association between heart disease and the development of infectious endocarditis (IE) has been known since the beginning of the last century. In 1909, Horder discovered the association between dental hygiene and IE.[1] For many years, the practice of dental antibiotic prophylaxis has been recommended in most patients with prostheses, valvular heart disease, or congenital heart disease. As the incidence and mortality of IE have not changed during this period, the role of such measures has become a matter of debate. Thus, clinical guidelines have restricted the indications to high-risk procedures and high-risk patients.[2] The aim of this study was to determine the degree of knowledge of IE prophylaxis among Spanish dentists.

Between September 2011 and October 2011, we conducted a telephone survey of 2 oral health professionals from each of the 52 Spanish provinces. The sample was randomly selected from the *Yellow Pages* listing. Table 1 shows the list of questions. We interviewed 104 dental specialists: 50 (48.5%) dental physicians, 50 (48.5%) odontologists, and 4 (3%) maxillofacial surgeons. Their work experience was 19.1 (8.8) years. One hundred (97%) of the respondents considered IE to be fatal. Nevertheless, only 8 respondents thought that mortality could exceed 50%; 94 respondents (91.3%) recognized that IE prophylaxis was important or very important and routinely provided it in their clinical practice according to their own criteria. In total, 84.6% considered that cardiologists were accessible or reasonably accessible, but only 12% routinely consulted one to make a decision. A total of 54% stated that patients who needed prophylaxis did not attend their clinic with a recommendation for prophylaxis. Table 2 shows the cardiac conditions requiring antibiotic prophylaxis according to the respondents.[2] In total, 93% stated they were unaware of the guidelines on the prevention of IE. In addition, 54 (56.1%) thought that the message from the cardiology community is vague and changeable. Only 27 dentists (25.9%) completely agreed with the restrictions included in the updated guidelines.[2]

Several studies on native-valve IE and prosthetic-valve IE have demonstrated a change in the epidemiology of this disease. This entity affects an older population and is associated with the increased use of invasive techniques; a decrease in the cases of streptococcal infection and an increase among patients with a structurally normal heart has been observed.[3,4] In addition, several studies have shown that daily activities such as chewing gum or tooth brushing can cause transient bacteremia.[2] Based on the foregoing, the guidelines on the prevention of IE have increasingly restricted the indications for prophylaxis.

Since more than 90% of the respondents were unaware of these consensus guidelines, prophylaxis is probably being applied unnecessarily to patients with heart disease (more than 60% of respondents), patients with any type of mitral valve prolapse (65%) and patients with heart failure (40%). Proper indication in cases such as prosthetic valves or congenital heart disease remained high (75%), although it was slightly lower than in similar studies, where proper indication reached 80%.[5] The sources of information used by these professionals were journals or dentistry bulletins.

Most dentists thought that the message from the cardiology community is changeable and vague. Given that more than 80% stated that cardiologists are accessible or reasonably accessible, and that most considered the role of prophylaxis to be very important, we may be facing a serious communication problem between cardiologists and professionals in this field, since we are not obtaining the intended effect.

There may also be a medicolegal reason for this situation.[6] In Spain, dentistry is one of the liberal professions, and although it seems clear when prophylaxis should be indicated and in whom, there is a broad spectrum of patients, including specific groups

Table 1
List of Questions

What academic qualifications do you have?
How many years have you been working in your profession?
Do you think that infective endocarditis can be fatal? What percentage?
What role do you think infective endocarditis prophylaxis has in dental procedures?
Do you use prophylaxis at your discretion or do you require a cardiologist's report?
Do patients attend your clinic with recommendations for infective endocarditis prophylaxis?
Do you think prophylaxis is needed in the following cases?
Coronary artery bypass grafting
Coronary stent
Cyanotic congenital heart disease
Innocent murmur
Mechanical valve prostheses
Mitral valve prolapse
Heart failure
How do you rate access to cardiologists to discuss your questions?
How do you rate the message from the cardiology community regarding infective endocarditis prophylaxis?
Do you know of the NICE/AHA/ESC guidelines on the prevention of infective endocarditis?
What is your opinion of the virtual disappearance of prophylaxis in dental procedures in the latest clinical practice guidelines?

AHA, American Heart Association; ESC, European Society of Cardiology; NICE, National Institute for Clinical Excellence.

Table 2
Indication for Prophylaxis According to Heart Condition

Type of heart condition	Correct answer	Result
Coronary artery bypass grafting	No	37 (35.6)
Coronary stent carriers	No	42 (40.4)
Heart failure	No	29 (27.9)
Innocent murmur	No	82 (78.9)
Mitral valve prolapse	No	39 (37.5)
Mechanical valve prostheses	Yes	98 (94.2)
Cyanotic congenital heart disease	Yes	75 (72.1)
Average		57.4 (55.2)

Data are expressed as no. (%).

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(pregnant women, children, etc.) in whom IE can be fatal and thus minimizing the risk is prioritized.

In conclusion, the degree of knowledge of IE and the correct indications for antibiotic prophylaxis among oral health professionals in Spain is poor. These findings suggest the need to increase knowledge of the guidelines on IE prevention among Spanish dentists and to establish new channels of communication such that the message from various scientific communities has its intended effect.

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A Heart Sound Simulator as an Effective Aid in Teaching Cardiac Auscultation to Medical Students and Internal Medicine Residents

Enseñanza de auscultación cardiaca a estudiantes y residentes de medicina mediante el uso de un simulador de ruidos cardiacos

To the Editor,

Cardiac auscultation is a reliable and cost-efficient clinical skill,[1,2] but is being replaced by sophisticated, costly techniques. Moreover, recent experiences have shown that proficiency in this skill has declined among physicians in training.[3] The objective of this report was to evaluate auscultation skills in undergraduate and postgraduate students and determine whether a training program involving a heart sound simulator can improve these skills.

This study included 32 fifth-year medical students (in Chile, undergraduate medical degrees take 7 years to complete) and 18 first- and second-year internal medicine residents. The SAM (Student Auscultation Manikin, Cardionics Inc.; Texas, United States) was used, which is capable of reproducing heart sounds at the 4 standard locations (mitral, aortic, pulmonary, and tricuspid). All of the participants underwent a baseline evaluation that included auscultation of the following sounds: normal heart sounds; mitral stenosis (loud first sound, opening snap, and a rumbling murmur); mitral regurgitation (apical holosystolic murmur); aortic stenosis (ejection click, harsh early-to-midsystolic murmur at the base of the heart); aortic regurgitation (diastolic murmur); third and fourth sounds; and pericardial friction rub. Half of the students and half of the residents were randomly assigned to 1 of 2 groups; each group (the SAM group, participants who underwent a training program in cardiac auscultation using the SAM, and the control group, participants who continued their usual training program) was made up of 25 individuals.

In the SAM group, training consisted of three 45-min sessions of heart sound auscultation with the simulator; in total, each student and resident listened to every sound at least 300 times. Participants were told which sound was being reproduced and could ask the instructor any questions they might have. The order in which the murmurs were auscultated in each session was randomized. Once the training period was over, 4 weeks after the baseline evaluation, all of the participants underwent the final evaluation in which the same manikin was employed; in addition to the 8 sounds described above, the participants were required to listen to 2 additional heart sounds (atrial septal defect and patent ductus arteriosus), in order to reduce the possibility of their identifying the sounds correctly by chance. These new sounds were not evaluated.

This study received the approval of the ethics committee of our institution; the participants had been free to decide whether or not they wished to enroll in it. Participation had no effect on the students' grades.

In the baseline auscultation, the participants (students and residents) correctly identified an average of 31% of the heart sounds presented to them; there were no significant differences between residents and students (36% vs 26%; P=.22).

In the final, post-training auscultation, the percentage of correct responses by the participants in the SAM group improved from 28% to 73% (P<.01); in the control group, this percentage increased from 32% to 41.5% (P=.2). The percentage of correct responses in the SAM group was significantly higher than that of the control group (73% vs 41.5%; P<.01) (Figure).

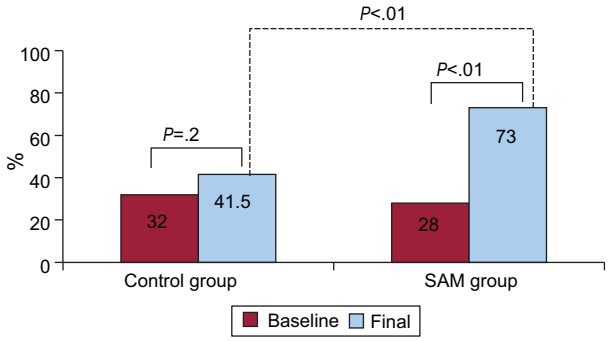

Figure. Percentage of correct diagnoses based on auscultation of heart sounds according to type of training. SAM, Student Auscultation Manikin.