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ORIGINAL ARTICLE

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New guidelines for cardiac risk assessment prior to non-cardiac surgery

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Abstract: The European Society of Cardiology (ESC) has established guidelines to determine the risk for non-cardiac procedures, such as oral procedures, when individuals have experienced severe cardiac disease, including myocardial infarction. This is the first time the ESC has developed consensus guidelines to assist practitioners in managing care for cardiac patients receiving medical or dental procedures. Factors for risk assessment are described and management for oral care is discussed.

Key words: management of care; professional practice; systemic disease

Introduction

The European Society of Cardiology (ESC) has issued it's first-ever guidelines on the management of cardiac risk in non-cardiac surgery (1). The guidance focuses on practical, stepwise evaluation of the patient and stratifying the cardiac risk. The preoperative cardiac risk assessment intends to identify individuals with an increased risk during non-cardiac surgical procedures (such as periodontal surgery or non-surgical periodontal debridement). These guidelines are very similar to 2007 guidelines to assess cardiac risks for non-cardiac procedures published by the American College of Cardiology/American Heart Association (2, 3). The ESC guidelines identify myocardial infarction (MI) and cardiac death as the most significant events that could develop during general surgical or non-surgical treatment procedures (4). Ischaemic heart disease including unstable angina is a third significant condition. Unstable angina is defined as angina pain when the client is at rest and often precedes acute coronary syndrome (ACS) (5). The purpose of these guidelines is to summarize and evaluate all currently available evidence on a

particular issue with the aim of assisting clinicians in selecting the best management strategy for an individual patient suffering from a given cardiac condition. The guidelines were drafted from expert opinions of task force members. The procedures followed in brief, included identifying experts in the field who undertook a comprehensive review of the published evidence for management and/or prevention of a given condition. A critical evaluation of diagnostic and therapeutic procedures was performed including assessment of the risk/benefit ratio. Estimates of expected health outcomes for larger societies were included, where data existed. The level of evidence and the strength of recommendation for particular treatment options were weighed and graded according to predefined evidence scales. The consensus paper specifically discusses how conflicts of interest were addressed in that the guidelines were financed by the ESC and were developed without any involvement of the pharmaceutical, device, or surgical industry influences, and further that proposed guidelines were reviewed by outside specialists.

Preoperative assessment

The taking and reviewing of an adequate medical history is the best strategy for preventing medical emergencies in oral healthcare practice settings. Blood pressure and pulse rate are commonly used as a measure of cardiovascular health. Cardiac risks increase when an MI has been experienced <30 days prior to the appointment (1, 2) and/or when the MI was experienced >30 days in the recent past but an adequate level of functional capacity (also called exercise capacity) has not been regained. The risk for a cardiac emergency is increased, when the individual cannot meet a four metabolic equivalent functional capacity level (Table 1) (1, 2, 5). For this reason when cardiac disease is reported questioning should include determining if the individual has the capacity to walk up a flight or two of stairs or if the person can run a short distance. If these two activities can be accomplished the principal author of the ESC task force suggests four metabolic equivalents have been reached (4). Cardiac complications can occur when non-cardiac procedures are of long duration, involve significant blood loss or are extensive in scope; however, dental surgery is in the low risk category (<1% chance of risk) and head and neck surgery is in the moderate risk category (1–5% risk) (1, 2). The ACC/AHA lists another category of 'other low risk procedures' or treatments that could include periodontal debridement (2, 3). The ESC risk assessment tool should assist the clinician to make proper management decisions as part of patient care; however, the ultimate judgment regarding the care of an individual must be made in consultation with the physician in charge of the individual's medical care. The ESC guidelines note that elderly individuals are at an increased risk for cardiovascular events due to age-related factors. Blood pressures ≥180/110 are considered to be ASA IV status (do not treat) and pulse rates <50 or over 120 bpm should be medically evaluated before oral non-surgical or surgical procedures (5, 6).

Table 1. **Energy requirement for metabolic equivalents (METs)**

One MET	East, dress oneself, use toilet
	Walk indoors around house
	Walk a block on level ground at 2–3 mph
Four METs	Heavy housework, scrub floors, move furniture
	Climb a flight of stairs carrying groceries
	Walk at 4 mph on treadmill
	Run a short distance
10 METs	Participate in strenuous activities, singles tennis, football, skiing, etc.

Adapted from Fleisher *et al.* (2).

Drug therapy

It is very likely that individuals with a history of cardiovascular disease (CVD) will be taking aspirin or another antiplatelet medication, such as clopidogrel (Plavix). The ESC Task Force changed prior recommendations regarding discontinuation of aspirin use and no longer recommends that aspirin be discontinued prior to any surgical procedure, unless the individual has a high risk for excessive bleeding due to other medical conditions (1, 4). Newer antiplatelet agents (e.g. Plavix) and anticoagulants [e.g. warfarin (Coumadin)] should be continued, and considered to be safe because the risk for thrombus formation leading to stroke or MI (if the drug is discontinued) is greater than the increased bleeding that may occur (1). Most cases of bleeding from antiplatelet agents can be stopped with direct pressure on the bleeding site (1, 5, 6). Most texts recommend using a low concentration of vasoconstrictor for individuals who have CVD, such as no more than two cartridges of 1:100 000 epinephrine, with slow injection using an aspirating syringe (5, 6). Levonordefrin, another vasoconstrictor used in local anaesthesia, at concentrations of 1:20 000 is equivalent to 1:100 000 of epinephrine.

Management

For the individual with a history of MI or unstable ischaemic heart disease oral care decisions should be made following determining that (i) 30 days or more has been completed since the cardiac event, (ii) a four metabolic level of functional

capacity has been reached, (iii) appointment length is not of an excessive duration, and (iv) medical clearance is obtained through consultation with the physician following the medical care of the individual. Blood pressure and pulse should be monitored every appointment when CVD is reported and treatment is contraindicated when levels are ≥180/110. Pulse rates ≤50 bpm or ≥120 bpm should be medically evaluated before continuing with invasive oral procedures. When drug therapy includes antiplatelet agents, such as aspirin, these agents should be continued throughout oral treatment procedures. If vasoconstrictors are used, they should be limited to no more than two cartridges of 1:10 000 or 1:20 000 (levonordefrin).

Disclosure statement

The writer of this article declares that neither she nor any member of her family has a financial arrangement or affiliation with any corporate organization offering financial support or grant monies for this article, nor has she received any financial compensation for article content.

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