

## President's Page

# The European Society of Cardiology and the Latest Guidelines for “Seafarers”

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*Ἐπιστήμη ποιητική εὐδαμονίας*  
Science is poetic bliss

Plato (427–347 BC)

In recent years, the European Society of Cardiology, keeping up with the modern rapid pace of science, has been extremely productive in creating clinical guidelines. At the recent European Congress of Cardiology in Barcelona, five new sets of guidelines were announced, which I believe are worthy of comment.

The guidelines regarding the cardiological evaluation of patients who undergo non-cardiac surgical procedures are extremely important, given that they are directed at the large number of cardiologists who on a daily basis have to evaluate patients who are candidates for surgery.<sup>1</sup> It is estimated that within the European Union more than 19 million major non-cardiac surgical procedures are performed annually, 6 million of which involve patients with multiple comorbidities and an increased perioperative risk of complications. The guidelines recommend an individualised and thorough, step-by-step investigation, aimed at uncovering the high-risk individuals in whom appropriate pharmaceutical interventions, in combination with a modification of anaesthesiological and surgical techniques, will allow them to proceed with safety to the operating theatre. Here we should mention that the administration of beta-blockers and aspirin perioperatively remains controversial, with a class IIb recommendation. In 2013, studies from the DECREASE group were brought into question and were withdrawn from the international literature. Many other studies gave conflicting results as to the effectiveness of the wide and periprocedural use of beta-blockers, especially metoprolol, while the

large POISE-2 trial, which included 10,010 patients, showed that perioperative aspirin increased the risk of haemorrhage by 50%, while having no significant benefit in terms of ischaemic events. Therefore, the administration of these drugs should be individualised and restricted only to patients who are at high surgical and cardiac risk. In contrast, the periprocedural continuation of statins in those already taking them, and their commencement in the case of vascular surgical procedures has proved particularly beneficial.

In the investigation of patients who are surgical candidates, the cardiologist should take into account the gravity of the surgery, as well as the patient's functional capacity and cardiac risk factors. The latter include a history of coronary artery disease, heart failure, cerebrovascular disease, insulin-dependent diabetes mellitus, and kidney failure (serum creatinine >2 mg/dL or GFR <60 mL/min).

Stabilised cardiac patients who are being considered for low-risk surgery (superficial, breast, dental, carotids in asymptomatic patients, ophthalmological, minor gynaecological, urological, and orthopaedic), regardless of their functional capacity, or for intermediate-risk (gallbladder removal, hernia, splenectomy, carotids in symptomatic patients, endovascular procedures of the aorta and peripheral vessels, head and neck, major urological, gynaecological, and orthopaedic) or high-risk (aorta and major vessels, duodenal/pancreatic, hepatectomy, oesophagus, or adrenal glands, total cystectomy, pneumonectomy, liver or lung transplantation, puncture of abdominal organs)

operations while showing good functional capacity (>4 METs), should be referred for surgery with no need for further investigation. In contrast, in patients with poor functional capacity (<4 METs) who undergo intermediate- or high-risk surgery, the presence and the number of cardiac risk factors should be taken into account. Patients with poor functional capacity and without cardiac risk factors may be referred without further investigation for intermediate-risk surgery, while patients with poor function and  $\geq 1$  cardiac risk factors should undergo cardiac stress testing, and in the case of extensive ischaemia should be referred for reperfusion before the intermediate- or high-risk non-cardiac surgery. Given that the reperfusion options will affect the timing of the non-cardiac surgery, they should be discussed and decided by the team of specialists involved (anaesthesiologist, surgeon, cardiologist). In the case of PTCA, antiplatelet medication is required for at least 15 days; in the case of bare-metal stent implantation, double antiplatelet medication is needed for at least a month; while for drug-eluting stents double antiplatelet medication should be continued for 12 months, in the case of old generation DES, and for 6 (or even 3) months for the new generation everolimus- and zotarolimus-eluting DES. The premature cessation of double antiplatelet treatment exponentially increases the risk of in-stent thrombosis and should be avoided. Every attempt should be made to ensure that the patient undergoes non-cardiac surgery under double antiplatelet medication; if this is not feasible because of an increased risk of bleeding, aspirin alone should be administered. If both antiplatelet medications are stopped prematurely, a haemodynamics laboratory should be available to deal with possible acute in-stent thrombosis.

In patients who are in unstable cardiological condition, which the guidelines define as unstable angina, myocardial infarction with residual ischaemia, congestive heart failure, severe arrhythmias, and severe valvular disease, it is obvious that every attempt should be made to stabilise or correct their condition before they undergo the additional stress of surgery. Specifically, all symptomatic severe valvular diseases, or asymptomatic severe valvular diseases in patients who have high-risk criteria (mitral stenosis and PASP >50 mmHg, mitral or aortic regurgitation and compromised left ventricular systolic performance), or who are undergoing a high-risk non-cardiac operation (asymptomatic severe aortic stenosis), should be treated prior to the surgery. Asymptomatic severe

aortic stenosis is not a contraindication for low- and intermediate-risk surgery.

In patients with high cardiac risk who are to undergo high-risk surgical procedures, for the first time the guidelines include the measurement of biomarkers (troponins, BNP), before and after the non-cardiac surgical procedure, for additional evaluation of the perioperative and medium-term cardiovascular prognosis.

The chairman of the guidelines committee for pulmonary embolism (PE) was Stavros Konstantinides, principal investigator in the PEITHO study, which evaluated the administration of tenecteplase to patients with intermediate risk PE.<sup>2</sup> Venous thromboembolism, which includes deep vein thrombosis and PE, is the third most common cardiovascular disease, with a total annual incidence of 100-200 per 100,000 population.

PE may be roughly categorised as induced or not – according to the presence of recognised risk factors, such as recent surgery and trauma, prolonged bed rest, pregnancy, the use of contraceptive pills, or malignancies – and as high-risk or not, based on whether hypotension and shock are present. Where there is suspicion of high-risk PE, CT angiography or, if not available, echocardiography, should be performed immediately to look for signs of right ventricular overload. In the case of a positive finding, reperfusion (thrombolytic therapy or embolectomy) should be performed immediately.

The PE diagnostic algorithm recommends the use of the Geneva and/or Wells scores, which take into account the history of thromboembolism, recent surgical treatment and bed rest, the presence of tachycardia, haemoptysis, active cancer, and clinical signs of deep vein thrombosis, and classify patients as having a low, intermediate, or high clinical probability of PE.

For the non high-risk (i.e. haemodynamically stable) patient, the diagnostic algorithm will determine the clinical probability of PE. When this is low or intermediate, there should be an initial check of D-dimers; a negative test rules out PE, while if the D-dimers are found to be elevated CT angiography should be performed. In the case of high clinical probability, only CT angiography can rule out the diagnosis. Other useful diagnostic examinations are ventilation/perfusion scintigraphy and venous compression ultrasonography to look for deep vein thrombosis in the lower limbs.

A very important area is the evaluation of the

short-term prognosis. Patients with hypotension or shock are at increased risk of early mortality. In other patients, the short-term prognosis is estimated using the Pulmonary Embolism Severity Index (PESI) score, or its simplified form, sPESI. This score grades clinical, laboratory and haemodynamic variables and classifies patients as having a low, moderate, or high risk of mortality within 30 days. In the case of intermediate risk the patient should be tested for right ventricular dysfunction or troponin. If both are positive, the patient is considered to be at intermediate to high risk and should be kept under intensive monitoring, as there is an increased risk of haemodynamic collapse. In any case, anticoagulant medication should be started promptly, with standard heparin, low molecular weight heparin, or fondaparinux for the first 5-10 days and then with an oral vitamin K antagonist. The new guidelines include the alternative option of rivaroxaban administration (15 mg twice daily for three weeks, then 20 mg daily) or apixaban (10 mg twice daily for seven days, then 5 mg twice daily), without bridging with parenteral anticoagulants. If dabigatran or edoxaban is chosen, it should be administered after treatment with parenteral anticoagulants during the acute phase. The anticoagulant medication should be continued for at least three months. In the case of non-induced PE or relapse, the anticoagulation treatment should be continued for a longer period on an individualised basis, with evaluation of the haemorrhagic risk. Patients with cancer should take low molecular weight heparin for the first 3-6 months, while anticoagulation treatment should be continued indefinitely or until they are cured of the disease.

Chronic thromboembolic disease deserves a special mention. The diagnosis is based on the finding of high pulmonary artery pressures (mean pressure  $\geq 25$  mmHg) with normal wedge pressure ( $\leq 25$  mmHg) after at least 3 months' anticoagulation therapy, in combination with a perfusion defect on scintigraphy or CT angiography. The therapy of choice is endarterectomy, while in operable cases drugs for idiopathic pulmonary hypertension may be used.

## References

1. Kristensen SD, Knuuti J, Saraste A, Anker S, Bøtker HE, Hert SD, Ford I, Gonzalez-Juanatey JR, Gorenek B, Heyndrickx GR, Hoefl A, Huber K, Iung B, Kjeldsen KP, Longrois D, Lüscher TF, Pierard L, Pocock S, Price S, Roffi M, Sirnes PA, Sousa-Uva M, Voudris V, Funck-Brentano C; Authors/Task Force Members. 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management: The Joint Task Force on non-cardiac surgery: cardiovascular assessment and management of the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA). *Eur Heart J*. 2014 Sep 14; 35: 2383-2431. doi: 10.1093/eurheartj/ehu282. Epub 2014 Aug 1.
2. Authors/Task Force Members, Konstantinides SV, Torbicki A, Agnelli G, Danchin N, Fitzmaurice D, Galiè N, Gibbs JS, Huisman MV, Humbert M, Kucher N, Lang I, Lankeit M, Lekakis J, Maack C, Mayer E, Meneveau N, Perrier A, Pruszczyk P, Rasmussen LH, Schindler TH, Svitil P, Vonk-Noordegraaf A, Zamorano JL, Zompatori M; Authors/Task Force Members. 2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism: The Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC) Endorsed by the European Respiratory Society (ERS). *Eur Heart J*. 2014 Aug 29. pii: ehv283. [Epub ahead of print]

