

IDENTIFICATION OF HIGH RISK SURGICAL PATIENT

Miodrag Milenovic¹, Vojislava Neskovic², Gordana Jovanovic³,
Dusica Simic⁴

Contrary to a number of international professional associations, majority of our anesthesia departments have no guidance to classify high risk. The relationship between risk and outcome of the patient is usually not known on the local level.

Our professional aim is to achieve higher level of understanding and to make easier guidance to help management of patients in the perioperative period. These goals have to be achieved according to modern concepts of critical care. Potential role of the anesthetist as perioperative physician and experienced practitioner, working with patients with number of co-morbidities, presenting for elective and emergency surgery, is to categorise the patients as high or low risk perioperatively and to control the level of risk.

Important in recognition and management of critical ill patient is to have educated and effective teams, capable to recognize, start treatment and adequate support in time and to refer them to the adequate ICU level provision.

Wide range of differences: medical, age, gender and more, need to be considered before the data from some literature can be accepted as applicable to our local population. With just extrapolation, extent of the risk can be biased. We have to avoid two types of possible error, availability and compression bias. Positive framing is another way of presentation of risk to the patient or

1 Centre for Anaesthesia and Intensive Care, Clinical Centre of Serbia, Belgrade

2 Department of Anaesthesia and Intensive Care, Military Medical Academy, Belgrade, Serbia

3 Clinic for Anaesthesia and Intensive Care, Clinical Centre of Vojvodina, Novi Sad, Serbia

4 School of medicine, Belgrade University, Department for Anaesthesia, University children's Hospital, Belgrade, Serbia

his family, which can strongly influence on the decision making process. Relative or absolute risk reduction, number needed to treat and other statistical data, could be differently interpreted with the same purpose.

What is high risk? We have already shown how difficult is to express a probability in terms that mean something to the layperson. Using real numbers may be confusing too. Giving a meaning to numbers is one of the possibilities.

Peri-operative mortality in our region is higher than in the affluent countries with modern western medicine principles in identification and treatment of high risk surgical patients. Those who just assume that there are the problems cannot be shore, because we did not develop anything similar to UK's National Confidential Enquiry into Patient Outcome and Death. Several independent factors influence on the poor results we achieved.

Small percentage of patients contributes to the majority of perioperative deaths and uses a disproportionate amount of medical budget. The identification of those patients can be based on patient and operative characteristics: clinician identification and scoring systems.

In hospital identification of high risk patient – critical care outreach service

Important in recognition and management of critical ill patient is to have educated and effective teams, capable to recognize, start treatment and adequate support in time and to refer them to the adequate ICU level provision. These teams, with a variety of names, function as a link between critical care and wards, provide education, recognition and initial management of acute illness, support patient care and facilitate management of acutely ill patients (either by providing the support necessary to allow the patient to be cared for in the ward environment or by facilitating early admission to critical care). Great majority of hospitals did not have a critical care unit outreach team.

Surgeons, anaesthesiologists – intensivists, perioperative specialists, are responsible for admitting surgical patients to ICUs, the patients who will benefit the most from highest postoperative care level. It is very hard to identify which patients are at high risk of complications (or death) after major surgery. Patients undergoing high-risk surgical procedures include only 12.5% of surgical admissions to hospitals but more than 80% of deaths, with less than 15% of these high-risk patients admitted to the ICU postoperatively (3,4).

Preoperative evaluation

Preoperative risk factors are helpful in detecting patients who are most likely to experience poor postoperative outcomes. Comorbidities are well-known as predictors of morbidity and mortality. The best known and widely used is the American Society of Anesthesiologists' (ASA) physical scoring system, which describes the patient's health in general and burden of comorbidities. The score requires no laboratory data and is simple to apply. ASA classification has been recognized as a helpful predictor of potential postoperative morbidity and mortality (5). Charlson Comorbidity Index (CCI) is also scoring system of preoperative comorbidities. More detailed than the ASA classification, this score is considered more useful for research purposes (6). Revised Cardiac Risk Index (RCRI), is organ system-specific scoring system that incorporates six factors to predict the risk of major cardiac events after non-cardiac surgery (7). No one of these scoring systems provide enough information regarding the risk for an individual patient. The RCRI predicts cardiac risk, while the ASA and CCI do not include variables specific to the surgical procedure.

American College of Cardiology Foundation (ACCF) and the American Heart Association (AHA) preoperative cardiovascular risk evaluation guidelines in non-cardiac surgery, rely on a modified version of the Duke Activity Status Index. It approximates energy requirements for different patient activities. Depending on a patient's functional capacity, clinical risk factors, and type of surgery, these guidelines recommend either surgery or further cardiac optimisation prior to the considered procedure. Clinical risk factors include active cardiac conditions and elements of the RCRI, and surgical procedures are divided into those with low, intermediate, or high risk (8). These guidelines address cardiovascular risk and demonstrate the importance of patient's preoperative status and the particular surgical procedure, for evaluation of the risk of poor postoperative outcomes.

Intraoperative events

Urgency and surgery duration have certain impact and are associated with worse outcome. Operative difficulties became a major predictor of high-risk surgical procedures with at least 5% mortality. Combined with advanced age and comorbidities, are highly predictive for increased risk of postoperative death.

Each surgical patient is an entity, and needs to be closely monitored, providing detailed information during anesthesia and surgery, and may have a large impact on outcome. Hemodynamic stress manifested as vital signs extremes, may influence the postoperative course. Intraoperative tachycardia,

blood pressure extreme and long complicated surgical procedures require ICU admission, prolonged hospital stay, and increases hospital mortality (9).

There is a number of scoring systems for patients admitted to the ICU. None of them takes into account specific intraoperative data from the surgical procedure itself. Most of these scoring systems were created and evaluated for the audit purpose. They are valid for calculate possible results in groups of patients. They may not be useful in individual patients (10).

Improvement of postoperative outcome

A number of interventions on the patient, hospital and health system level, have the potential to improve postoperative outcome in high-risk surgical patients. Decisions related to the need for intensive care admission after surgery are crucial for high quality patient care. All principles of ICU treatment: various invasive and non-invasive monitoring, diagnostic and therapeutic procedures, together with individualized goal-directed therapy in high-risk surgical patients, may improve final outcome.

REFERENCES:

1. Hux JE, Naylor CD. Communicating the benefits of chronic preventative therapy: does the format of efficacy data determine patients' acceptance of treatment? *Med Decision Making* 1995; 15: 152-7.
2. Findlay GP. Knowing the Risk. A review of the peri-operative care of surgical patients A report by the National Confidential Enquiry into Patient Outcome and Death (2011)
3. Pearse RM, Harrison DA, James P, et al.: Identification and characterisation of the high-risk surgical population in the United Kingdom. *Crit Care* 2006, 10:R81.
4. Sobol JB, Wunsch H. Triage of high-risk surgical patients for intensive care. *Crit Care*. 2011;15(2):217.
5. Wolters U, Wolf T, Stutzer H, Schroder T: ASA classification and perioperative variables as predictors of postoperative outcome. *Br J Anaesth* 1996, 77:217-222.
6. Charlson ME, Pompei P, Ales KL, MacKenzie CR: A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. *J Chronic Dis* 1987, 40:373-383.
7. Lee TH, Marcantonio ER, Mangione CM, et al.: Derivation and prospective validation of a simple index for prediction of cardiac risk of major noncardiac surgery. *Circulation* 1999, 100:1043-1049.
8. Fleisher LA, Beckman JA, Brown KA, et al.: 2009 ACCF/AHA focused update on perioperative beta blockade incorporated into the ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American college of cardiology foundation/American heart association task force on practice guidelines. *Circulation* 2009, 120:e169-e276.
9. Hartmann B, Junger A, Rohrig R, et al.: Intra-operative tachycardia and perioperative outcome. *Langenbecks Arch Surg* 2003, 388:255-260.
10. Higgins TL: Quantifying risk and benchmarking performance in the adult intensive care unit. *J Intensive Care Med* 2007, 22:141-156.