concentration as factors leading to the development of postoperative delirium [1]. What we would like to add is that delirium is a neurocognitive and neuropsychiatric disorder, the role of genetic contributors, e.g., in the form of genetic polymorphisms related to the genesis of dementia/neurocognitive malfunction in its various forms, should also be taken into account for a more thorough investigation of the subject. Older studies [2–4] have not confirmed the putative relationship between genetics and delirium after heart surgery. However, as new knowledge emerges, novel research items, such as the variants of gene TREM2 [5] should also get under the scope of investigation, as they might elucidate the pathogenesis of postoperative delirium.

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References


eComment. Postoperative delirium in elderly cardiac surgery patients

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I read with great interest the paper by Smulter et al. [1]. The authors aimed at determining the incidence of and risk factors for postoperative delirium (POD) in older patients undergoing cardiac surgery. They reported an incidence of POD of 54.9% and confirmed many of the previously suggested risk factors. In their study, POD was strongly associated with an increased volume load during surgery. I would like to add some comment on this important topic.

POD is a common and serious complication in elderly cardiac surgery patients. It is defined as an acute and fluctuating disturbance in consciousness, characterized by disorientation, a disturbed sleep-wake cycle, memory impairment, perceptual disturbances, and altered psychomotor activity [2,3]. POD is an important cause of prolonged hospital stay (economic burden), nursing home placement, and increased morbidity and mortality after cardiovascular surgery. In addition, it is associated with late death, hospital readmission, and reduced cognitive and functional recovery. The reported incidence of POD ranges from 30 to 73% depending on the diagnostic method used to define POD, study design, and type of cardiovascular procedure [2–5].

The exact pathophysiology of POD is unknown. There are several potential mechanisms including perioperative cerebral hypoperfusion, alterations in the levels of neurotransmitters, systemic inflammation and physiologic stresses. This pathophysiologic complexity contributes to high incidence of POD [3,4]. Elderly cardiac surgery patients are at a particularly high risk for POD owing to the use of cardiopulmonary bypass, the presence of macro- or microemboli resulting from aortic and cardiac manipulation, the complexity and duration of surgical procedure, cerebral reperfusion injury, and large volume and pressure shifts [3].

The likelihood of developing POD increases proportionally with the number of existing risk factors [4]. Identification of risk factors for developing POD allows surgeons to implement interventions aimed at reducing the incidence of POD in these high risk patients. There are many patient (predisposing) and surgery (precipitating) risk factors related to POD. These risk factors include advanced age, pre-existing dementia, depression, functional impairment, cognitive impairment, hearing and visual impairment, alcohol abuse, smoking, decreased left ventricular ejection fraction, pre-existing pulmonary disease, hypertension, atrial fibrillation, laboratory abnormalities, cerebrovascular disease, decreased albumin level, lower hemocrit, postoperative hypotension and increased blood transfusion [2–5].

The most critical steps in management of POD are prevention and early recognition. Both prevention and treatment should focus on the minimization and/or
elimination of predisposing and precipitating factors. There is currently no accepted preventive treatment for POD. Due to the multifactorial nature of POD, approaches which include strategies from multiple disciplines are the most effective in its prevention [5]. To prevent POD in high-risk patients, it should be focused on environmental modifications, psychoactive medication reduction, early mobilization, and prevention of complications [3]. Ten targeted domains to reduce delirium include (1) oxygen delivery to the brain, (2) fluid and electrolyte balance, (3) appropriate pain management, (4) decreased use of psychoactive medications, (5) optimization of bowel and bladder function, (6) nutritional support, (7) early mobilization, (8) prevention of postoperative complications, (9) appropriate environmental stimuli, and (10) treatment of delirium symptoms [5].

I think that recognition of early clinical signs and risk factors could be helpful for prevention and treatment, resulting in better outcomes.

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References