

Opinion

Preoperative Evaluation of Elderly Patients with Hip Fracture

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Hip fracture is one the most frequent cause of hospitalization in developed countries [1]. These patients are old (> 90% aged over 70 years) often with one or more severe comorbidities and functional and cognitive impairment. In my opinion the more relevant question to be answered is: surgery for hip fracture should effectively be considered an intermediate risk surgery as suggested by ACC/AHA and ESC guidelines? [2-3]. The blood losses related to surgical act, often not negligible, and the effects of spinal anaesthesia, which may cause an uncontrollable decrease in systemic vascular resistance, may increase significantly the risk of severe hypotension that in frail elderly patients, frequently affected by serious comorbidity, may be associated with an increase in severe complications or death.

In hospital mortality after treatment of hip fracture is comprised between 2.5 and 7%. Clinical evidence has been provided that early surgery is associated with a decreased 30-day and 1-year all-cause mortality [4-6] however results of these studies may suffer from a bias related to the delay in treatment of more compromised patients. Increasing age and comorbidities affect the outcome in patients undergoing hip surgery. Preoperative evaluation should allow to identify patients at high risk of early complications (most threatened are delirium, acute kidney disease, venous thromboembolism, congestive heart failure, myocardial infarction, anemia, pneumonia, new arrhythmias, gastrointestinal bleeding) and preventable in-hospital death in order to define the more appropriate anesthesia and surgical strategy. Moreover very high risk subjects may have indication to ICU observation in the immediate postoperative period. Several organization models have been proposed to improve the clinical approach in treatment of these patients [7,8]. An integrated team as the Hip Unit Fracture of our teaching hospital (including internal medicine specialists, cardiologist, geriatric, orthopedics and anesthesiologists) may contribute to shorten time from hospital admission to surgery and reduce perioperative complications [9]. Comorbidities indexes such as Charlson Comorbidity Scale and Greenfield scale have been associated with an higher in hospital and 30-day mortality and are able to predict in hospital complication, in particular delirium and kidney failure. In patients with known

heart disease may be difficult to follow the AHA/ACC or ESC guidelines for risk stratification since at least 50% of patients have cognitive impairment or moderate/severe functional limitations. Thus symptoms related to heart failure or chronic coronary artery disease may be underestimated and the patient's risk stratification not adequate. Moreover 6-8% of patients with hip fracture have undiagnosed aortic stenosis. Therefore, despite a large debate in recent literature, we believe that a service allowing real time bedside echocardiography may be recommended to evaluate not only aortic and mitral valve other than left ventricular function but also functional parameters such as estimated pulmonary artery pressure. Preliminary data from our Centre suggest that a RV/RA gradient > 40 mmHg is independently associated with a higher in hospital and 3 months mortality. Risk stratification in patients with heart failure and cognitive or functional impairment may be improved also by easy available laboratory parameter such as NT-pro-BNP. Since perioperative myocardial infarction is not uncommon clinical complication of hip fracture surgery, is frequently asymptomatic (analgesia, cognitive impairment) and is associated with a early and 1 year poor prognosis, troponin assay is useful before and after surgery (20% of patients with hip fracture related myocardial infarction show a significant troponin increase at hospital admission).

Another emergent problem in hip fracture is the high number of patients (about 20% in our experience) with ongoing anticoagulant (both warfarin and novel oral anticoagulants) or double antiplatelet drug therapy. Bridge therapy with LMWH at anticoagulant dose may be considered for high risk patients (mechanical valve in mitral position, previous stroke or TIA, recent venous thromboembolism) [10] but the matter is still debated and recent data suggested an increased risk of postoperative bleeding in patients treated with "full doses" of LMWH. Another problem in high risk patients may be the safety of rapid correction of anticoagulation with vitamin K administration. At present few data have published about the balance between an increased risk of embolization and the advantage of early hip surgery. Some studies have demonstrated the relative safety of hip surgery in patients in double antiplatelet therapy for recently implanted medicated coronary stents [11]. These investigations do not report an increase in mortality or morbidity but on average the need for 1 more blood unit transfusion.

As for cardiac surgery the development of a validated simple risk score to predict morbidity and mortality after hip fracture could be useful to identify high-risk patients who require medical optimization before surgery. Pugely et al [12] proposed a risk calculator which included as variables American Society of Anesthesia score (with had the highest negative impact on total complication incidence in the scoring model), complete functional dependence, active malignancy, patient race, cardiopulmonary disease, laboratory derangements, prolonged operating time, and open versus percutaneous surgery.

The authors reported that risk scores, based on weighted models, which included the aforementioned variables, predicted mortality (p, 0.001, C index: 0.702) and morbidity (p, 0.001, C index: 0.670) after hip fracture surgery.

In conclusion a careful multidisciplinary preoperative evaluation may lead to a decreased risk of complications and perioperative deaths in patients with hip fracture.

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