Vascular and cognitive risk factors for postoperative delirium

Delirium is a common, morbid and costly syndrome that occurs frequently after surgery for atherosclerosis. In this study, the team tested the hypothesis that vascular risk factors and mildly impaired cognitive performance would independently predispose non-demented patients to develop delirium after non-cardiac surgery.

The International Study of Postoperative Dysfunction recruited patients undergoing non-cardiac surgery from eight countries. Subjects provided detailed medical history and underwent preoperative testing of multiple cognitive domains with a neuropsychological battery. Postoperatively, all 1161 subjects were assessed daily for delirium.

The team found that vascular risk and mildly impaired cognitive performance independently predispose patients to delirium after non-cardiac surgery. These factors will help to identify high-risk patients for delirium and to design and target future intervention strategies.

Rudolph J, Jones R, Rasmusen L, Silverstein J, Inouye S, Marcantonio E (2007) Individual vascular and cognitive risk factors for postoperative delirium. *Am J Med* **120**: 807–13

Surveillance for hospital outbreaks of invasive group A streptococcal infections in Ontario

Streptococcus pyogenes can cause severe disease in the individual patient and dramatic hospital outbreaks. This study was carried out to describe the epidemiology of hospital outbreaks of invasive group A streptococcal infection in order to understand the potential benefit of proposed outbreak investigation and management strategies.

This prospective study was carried out in short-term care hospitals in Ontario, Canada. Patients with positive culture for group A streptococcus from a normally sterile site were recruited for the study. Laboratory-based surveillance identified patients with nosocomial invasive group A streptococcal infection. Epidemiological and microbiological investigations were used to detect transmission.

Of 2351 cases of invasive group A streptococcal disease, 12% were hospital-acquired. Community-acquired cases initiated 25% of outbreaks; most were cases of necrotizing fasciitis in patients admitted to the intensive care unit. The most common mode of propagation was patient-to-patient transmission.

The study concluded that practices to prevent hospital transmission of group A streptococci should include isolation of patients admitted to the intensive care unit with necrotizing faciitis, investigation after a single nosocomial case, and emphasis on identifying and treating health-care worker carriers on surgical and obstetric services and patient reservoirs on other wards.

Daneman N, Green K, Low D (2007) Surveillance for hospital outbreaks of invasive group A streptococcal infections in Ontario, Canada, 1992 to 2000. *Ann Intern Med* **147**: 234–41

Comparison of on-demand *vs* planned relaparotomy in patients with severe peritonitis

In patients with severe secondary peritonitis, there are two surgical treatment strategies following an initial emergency laparotomy: planned relaparotomy and relaparotomy only when the patient's condition demands it. The on-demand strategy may reduce mortality, morbidity, health-care utilization and costs, although randomized trials have not been performed. The aim of this study was to compare patient outcome, health-care utilization and costs of on-demand and planned relaparotomy.

A randomized, non-blinded clinical trial was conducted at two academic and five regional teaching hospitals in the Netherlands between November 2001 and February 2005. Patients had severe secondary peritonitis and an Acute Physiology and Chronic Health Evaluation (APACHE-II) score of 11 or greater. Interventions were allocated randomly to on-demand or planned relaparotomy strategy.

The primary end point was death and/or peritonitis-related morbidity within a 12-month follow-up period. Secondary end points included health-care utilization and costs.

The study found that patients in the on-demand relaparotomy group did not have a significantly lower rate of death or major peritonitis-related morbidity compared with the planned relaparotomy group but did have a substantial reduction in relaparotomies, health-care utilization and costs.

van Ruler O, Mahler C, Boer K et al (2007) Comparison of on-demand vs planned relaparotomy strategy in patients with severe peritonitis. *JAMA* **298**: 865–72

Use of continuous-flow device in patients awaiting heart transplantation

The use of left ventricular assist devices is an accepted therapy for patients with refractory heart failure, but current pulsatile volume-displacement devices have limitations that have reduced widespread adoption of this technology. Continuous-flow pumps are newer types of left ventricular assist devices developed to overcome some of these limitations.

In this prospective, multicentre trial, 133 patients with end-stage heart failure who were on a waiting list for heart transplantation underwent implantation of a continuous-flow pump. The principal outcomes were the proportions of patients who, at 180 days, had undergone transplantation, had cardiac recovery, or had ongoing mechanical support while remaining eligible for transplantation.

The principal outcome occurred in 75% of patients, and the median duration of support was 126 days. At 3 months, therapy was associated with significant improvement in functional status and in quality of life. Major adverse events included postoperative bleeding, stroke, right atrial failure, and percutaneous lead infection. Pump thrombosis occurred in two patients.

The study concluded that a continuous-flow left ventricular device can provide effective haemodynamic support for a period of at least 6 months in patients awaiting heart transplantation, with improved functional status and quality of life.

Miller L, Pagani F, Russell S et al (2007) Use of continuous-flow device in patients awaiting heart transplantation. *N Engl J Med* **357**: 885–96