EDITORIAL

Perioperative bleeding and early mortality in hip and knee surgery

Bleeding, deep venous thrombosis and, above all, cardiovascular accidents are the more severe complications of major orthopedic surgery, as they may be life-threatening. Mortality at 3 months following total hip or knee replacement was 0.9% in a French observational study of 1080 patients [1]. Large-scale registries allow precise estimation: mortality was 0.24% in 7665 under 60-year-old in the Danish registry [2], reaching 1.8% in the 6411 patients operated on after the age of 80 years. Comorbidity obviously entails increased risk: the French observational ESCORTE study of 6860 cases found 14.7% mortality at 6 months following hip fracture, one-third of which was from cardiovascular causes and 1.6% due to severe bleeding [3]. Lie et al. [4] reported a 4-fold elevation of risk in first-line hip and knee surgery in 71-to-80 year-old versus 50-to-60 year-old patients, with mortality concentrated in the first month.

Two risk factors seem to be predominant: overlooked coronaropathy (the "silent killer" unmasked by Devereaux et al. in the POISE study [5]) and bleeding.

The consequences of bleeding are particularly important as hemoglobin levels are brought down to less than 8 or 9 g/dl in patients with cardiovascular history [6]. This confirms Eikelboom’s findings, in anti-thrombotic treatment trials [7], of a 7-fold increase in mortality associated with major bleeding.

Allogeneic transfusion is essential in restoring hemoglobin levels, but is not without its own inherent infectious, immunologic and pulmonary risks.

Blood-sparing protocols seek to reduce the need for allogeneic erythrocyte transfusion while conserving adequate hemoglobin levels; they comprise three stages:

- pre-operative, ensuring that the patient comes to a potentially hemorrhagic operation with an "advance" able to cover any drop in hemoglobin level;
- postoperative, by recovery of discharged blood for possibile retransfusion;
- and peroperative.

Increased fibrinolysis during Total Hip Replacement (THR) was described 20 years ago [8], particularly during preparation of the acetabulum and, even more, of the femur. In Total Knee Replacement (TKR), this peak fibrinolysis affects general circulation when the tourniquet is released. Fibrinolysis continues through to postoperative hour 20; perioperative prophylaxis should therefore be implemented, and epsilon aminocaproic acid and tranexamic acid have been studied in this regard. The former is no longer available in Europe. Randomized studies of tranexamic acid against placebo or no treatment (19 studies, 999 patients) demonstrated a one-third reduction in blood loss, which is, obviously, especially significant in severely hemorrhagic surgery. The two studies published in our present edition confirm the usefulness of tranexamic acid in orthopedic surgery; the technique is expensive, and may naturally find its place in blood-sparing strategies during potentially hemorrhagic operations, helping avoid the severe collateral damage that can beset our functional surgery.

Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

References


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