

Peri- and postoperative vascular complications related to Major Orthopaedic surgery - Considerations on prevention and health economics.

Abstract, Solstrand 16.3.2007

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CRC (cardiorespiratory and vascular collapse, micro embolism, fat embolism) MI, stroke, DIC; ARDS, MODS, septicaemias, DVT and PE are well-known peri and postoperative complications. Although, different clinical manifestations, recent, pathophysiological, epidemiological and post-mortem studies have shown that these vascular complications have the same overlapping mechanisms and involve activation of the coagulation and inflammatory systems. Damage to tissues with high tissue factor content provides the substrate for these profound biochemical reactions. Arterial and venous events have previously been considered as separate entities and diseases but does not seem valid any more and in particular after major orthopaedic surgery.

Recent large epidemiological studies on total joint operated populations have shown that the overall postoperative mortality has decreased in recent years from about 1% to 0.2%. Parallel to this, fatal PE has declined during the last 1-2 decades in some regions. The absolute mortality is highest in close proximity to surgery and declines during the next 2-3 months and is age related. The vast majority are dying from vascular complications affecting both the arterial and venous side. However, a recent abstracted prospective study on elective total hip joint operated patients showed nearly 5% overall vascular morbidity and mortality within 3 months after the operation, compared to less than 0.2% in the normal population, indicating a substantial thrombotic vascular complication rate.

Initiation of prophylaxis has been debated for many years. Different interpretation of scientific data, empiric, medico-legal and local logistics have contributed to divergent opinions. Lack of reliable clinical data in surgical patients has made health economic calculations uncertain although several weeks with selfinjected heparin derivatives seemed cost-effective.

Pooled analyses of studies with an autopsy rate above 60% and large cohort studies have shown that prophylaxis with anticoagulants reduced overall mortality with about 50%. This shows that chemical anticoagulants have systemic anticoagulant effects.

We are about to enter a new era - a paradigm shift - moving from focus on post-traumatic venous thromboembolism to systemic vascular complications. The underlying biochemical reactions involve the haemostatic and inflammatory system. Clinical symptoms may occur from the time of trauma and weeks to months later. The latter is probably due to formation of vascular loci minoris resistentia and recurrence of new vascular episodes.