Articles of Interest

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ANESTHESIA / PHARMACOLOGY

Plasma tranexamic acid concentrations during cardiopulmonary bypass.

Is perioperative plasma aprotinin concentration more predictable and constant after a weight-related dose regimen?

Comparison of epsilon aminocaproic acid and low-dose aprotinin in cardiopulmonary bypass: Efficiency, safety and cost.

Effect of aprotinin (Trasylol) on the inflammatory and thrombotic complications of conventional cardiopulmonary bypass surgery.

Desflurane pharmacokinetics during cardiopulmonary bypass.

Pump prime aprotinin fails to limit proinflammatory cytokine release after coronary artery bypass surgery.

BIOCOMPATIBILITY

Neurological and general outcome in low-risk coronary artery bypass patients using heparin coated circuits.

Eighty patients were entered in a randomized, double-blinded, prospective trial to study the benefits of a new surface modification (SMARxT, Cobe Cardiovascular) on neurologic protection. Cardiotomy suction was avoided. Cerebral ischemia markers were similar in both groups but cognitive testing demonstrated a slight improvement in the coated circuit group. The authors warn that showing subtle, yet significant, improvements in clinical outcomes is difficult.

BLOOD CONSERVATION

Non-pharmacological strategies for blood conservation in cardiac surgery.

Pharmacological strategies for blood conservation in cardiac surgery: erythropoietin and antifibrinolytics.

Autotransfusion decreases blood usage following cardiac surgery - a prospective randomized trial.

CEREBRAL PROTECTION

Diffusion- and perfusion-weighted brain magnetic resonance imaging in patients with neurologic complications after cardiac surgery.

Changes in jugular bulb oxygenation in patients undergoing warm coronary artery bypass surgery (34–37 °C).

Advances in neuromonitoring for cardiothoracic and vascular surgery.

Neuropsychologic impairment after coronary bypass surgery: Effect of gaseous microemboli during perfusionist interventions.

Increased activity levels of perfusionists during cardiopulmonary bypass increases gaseous microemboli and impairs neuropsychologic function in patients. Blood sampling and drug or fluid administration should be minimized if possible.
Surface modification of extracorporeal circuits: Is there really an impact on cerebral performance after cardiopulmonary bypass?

EXTRACORPOREAL LIFE SUPPORT

ECMO support for single lung transplantation.

HEMATOLOGY

The influence of intravascular volume therapy with a new hydroxyethyl starch preparation (6% HES 130/0.4) on coagulation in patients undergoing major abdominal surgery.

Reduced haemostatic factor transfusion using heparinase-modified thrombelastography during cardiopulmonary bypass.

Heparinase-modified thromboelastography (TEG) is useful to direct infusions of hemostatic blood components in cardiac surgery patients. Use of the heparinase-modified TEG and treatment algorithm substantially reduced the administration of fresh-frozen plasma and platelet concentrate.

MYOCARDIAL PROTECTION

Stimulation of neutrophil activation during coronary artery bypass grafting: Comparison of crystalloid and blood cardioplegia.

Inactivation of the MEK/ERK pathway in the myocardium during cardiopulmonary bypass.

Plasma magnesium in patients submitted to cardiac surgery and its influence on perioperative morbidity.

Does warm antegrade intermittent blood cardioplegia really protect the heart during coronary surgery?


PATHOPHYSIOLOGY

Cardiopulmonary bypass elicits a pro- and anti-inflammatory cytokine response and impaired neutrophil chemotaxis in neonatal pigs.

Influence of modified ultrafiltration on coagulation, fibrinolysis and blood loss in adult cardiac surgery.

Compared to conventional ultrafiltration, modified ultrafiltration decreased postoperative blood loss and transfusion requirements in adult cardiac surgical patients.


The routine use of methylprednisolone does not influence the occurrence of postpericardiotomy syndrome (PPS) in pediatric cardiac surgery. The treated group had a marginally significant increase in complicated PPS.

Methylprednisolone does not benefit patients undergoing coronary artery bypass grafting and early tracheal extubation.

High dose or low dose methylprednisolone (MPS) offers no clinical advantages in ameliorating the detrimental effects on pulmonary function following cardiopulmonary bypass. MPS did not improve pulmonary compliance, A-a O₂ gradients, perioperative fluid balance or weight gain. MPS significantly increased blood glucose and extubation time.

Alternate explanation for the increasing oxygen consumption and lactatemia after surgery with hypothermic cardiopulmonary bypass.
Oxidative stress during cardiopulmonary bypass.

Influence of temperature during cardiopulmonary bypass on leukocyte activation, cytokine balance, and postoperative organ damage.

PEDIATRIC PERFUSION

Individualized heparin and protamine management in infants and children undergoing cardiac operations.

Cardiac surgery in the low-birth weight neonate - New approaches.

Premature infants are at higher risk for morbidity and mortality than normal birth weight children. However, it’s the author’s view that surgery should not be postponed until an “ideal” weight is reached. Several factors contribute to the success of neonatal cardiac surgery: cannulation with unusually small cardiac structures, decreased nutritional and cardiac reserves, immaturity of major organ systems, coagulopathy and impaired chest wall mechanics after sternotomy.

PERFUSION TECHNIQUE

Lowest hematocrit on bypass and adverse outcomes associated with coronary artery bypass grafting.

Emergency cardiopulmonary bypass in a bilaterally nephrectomized patient with a history of heparin-induced thrombocytopenia: Successful reexposure to heparin.

Blood product use during routine open heart surgery: The impact of the centrifugal pump.

A multicenter initial clinical experience with right heart support and beating heart coronary surgery.

Cardiac manipulation during off-pump coronary artery bypass often causes hemodynamic instability. Right heart support (RHS) with the AMED system increases both cardiac output and mean arterial pressure. RHS restores hemodynamics, provides better exposure to posterior anastomotic sites and reduces inotropic support for off-pump procedures.

VENTRICULAR ASSIST

Healing the heart with ventricular assist device therapy: Mechanisms of cardiac recovery.

Ventricular assist devices influence the survival of patients with postcardiotomy cardiogenic shock, acute myocarditis and severe heart failure after myocardial infarction. Recovery of stunned myocytes and the restoration of normal ventricular geometry results from reversal of hemodynamic insufficiency and myocardial stress.

Immunologic effects of implantation of left ventricular assist devices.