Risk Factors Affecting Outcomes in Patients Undergoing Hypothermic Circulatory Arrest During Aortic Surgeries

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Results:

78 Emergency Surgeries 56 male, 22 female
64 Non-emergency Surgeries 49 male, 35 female

Objectives:

• 159 patients with aortic pathologies requiring HCA surgery to evaluate pre- and intraoperative risk factors.

Methods:

- Patient charts were retrospectively reviewed from the Lehigh Valley Health Network Inpatient Electronic Medical Record and Department of Perfusion database from 2000-2010.
- 159 patients with aortic pathologies requiring HCA surgery were broken down according to surgery type and pathology.
- Adverse outcomes evaluated included:
  - 30-day mortality
  - Cerebrovascular Accident (CVA)
  - Renal Failure
  - Ventilator-Dependent Respiratory Failure (VDRF)

Background:

Hypothermic Circulatory Arrest (HCA) is a cardiopulmonary perfusion management technique used in heart surgery involving the aortic arch. It is used as a preventative measure for adverse neurological outcomes associated with these high risk surgeries in which blood circulation to the body and brain must be stopped.

Patients are cooled on the cardiopulmonary bypass circuit to a targeted temperature, usually between 15°C and 18°C, blood is exsanguinated into a reservoir, and circulation is halted to allow for surgical repair of the ascending aorta and the aortic arch.

Adverse Outcomes: Comparison of Surgery Types

Conclusions:

- Major aortic surgical operations requiring HCA have become safer in the past decade.
- Elective, non-emergent operations have very reasonable mortality and morbidity rates.
- Risk factors including emergency surgery, female sex, Diabetes Mellitus, and duration of cardiopulmonary bypass significantly affect the likelihood of death.