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Pre-emptive maximization of oxygen delivery in the cardiac surgical patient including the low ejection fraction patient

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Abstract

The tissue oxygen requirements of patients undergoing coronary artery bypass on cardio-pulmonary bypass are huge. The delivery of oxygen depends mainly on the stroke volume. The stroke volume depends on volume status, contractility and the afterload. These factors can be adversely affected intra operatively.. The imbalance between oxygen delivery and requirement causes a poor outcome. This paper addresses this issue by pre-emptively maximizing oxygen delivery. A patient with an ejection fraction of less than 30% would have serious impairment of oxygen delivery Milrinone was started immediately prior to induction of anaesthesia, in these patients to improve contractility and minimize further deterioration. Fluid boluses to optimize volume should only be given if there is volume deficiency and the patient can increase the cardiac output in response to fluid. Superior vena cava collapsibility and stroke volume variation were assessed with transoesophageal echocardiography. Fluid boluses were given accordingly. The after load was optimized after measuring after load reserve. The adequacy of tissue oxygenation was measured with superior vena cava oxygen saturation both before and after weaning off bypass. 85 successive patients have been done with this technique. 26% were with ejection fractions less than 30%. Overall mortality was 1.2%, the single mortality being in the low ejection fraction group (4.5%). The use of the intra aortic balloon pump was 0%. These results compare very favorably with other published studies.

Biography

Dr. Kanishka Indraratna MBBS, MD, FFARCSI, FRCA is Consultant Anesthesiologist at Sri Jayewardenepura General Hospital, Sri Lanka. He has also worked as a Consultant Anesthesiologist in England. His interests are cardiac and neuro anesthesia, critical care and intra operative transoesophageal echocardiography. A review article by him on “To give or not to give fluid challenges” was published in Trends in Anesthesia and Critical Care June 2012.