Evidence-Based Multidisciplinary Algorithm For the Diagnosis and Management of Perioperative Myocardial Ischemia

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Perioperative myocardial ischemia (PMI) affects 1-17% of patients in the perioperative setting and represents a medical emergency. However, many of these events may go unrecognized or untreated due to lack of symptoms or lack of appropriate screening and triage. The perioperative patient is at exceptionally high risk for ischemic events owing to a multitude of factors, including the hypercoaguable and inflammatory response to tissue damage, fluid shifts seen before and during surgery, and the often unattenuated increase in sympathetic tone seen intraoperatively and postoperatively. In addition, many patients remain off their anticoagulant and antithrombotic agents leading up to surgery and extending deep into the postoperative period. The mortality of PMI after non-cardiac surgery is thought to be 10-15%, reflecting a need for improved surveillance and intervention. Patients who have a high pre-operative risk for PMI include those with poor baseline cardiac status and those undergoing high-risk surgery. Other perioperative risk factors include high blood loss and transfusion rates during surgery, new intra- or post-operative ST-T changes, and post-operative untreated anemia, hypothermia, and pain. Barriers to proper identification and management include missed detection, delays in testing and diagnosis, lack of clear roles and responsibilities regarding ordering and follow-up of cardiac enzymes and EKG monitoring, incomplete pass-off between providers about intra-operative events, and delays in notification to consultant services, primary team, or outpatient providers. An abundance of evidence in the literature, suggest that key components of diagnosis and treatment are oft forgotten or overlooked during crisis situations. Easily accessible checklists and written pathways improve patient triage and care in the management of the critical patient. In order to address these barriers, an Anesthesia-driven multidisciplinary task force was formed among colleagues from the departments of Perioperative Nursing, Cardiology, and Surgery. Using available evidence about the diagnosis and management of PMI, our team produced an algorithm for use in the perioperative period to help stratify and triage cases requiring further attention. This pathway has helped systematize and guide perioperative management of myocardial ischemia, from detection, through acute management, to further evaluation, to diagnosis and treatment. We are working to validate use of our algorithm through retrospective analysis, simulation, and peer feedback.