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Anesthetic cardio protection in diabetes

Either volatile anesthetic isoflurane preconditioning or high-dose propofol treatment has been shown to attenuate myocardial IRI (ischaemia/reperfusion injury) in patients undergoing coronary artery bypass graft (CABG) surgery. Further, our recent clinical and basic studies show that alternative administration of isoflurane preconditioning and propofol post conditioning can synergistically attenuate myocardial injury in patients undergoing CABG surgery, and activation/preservation of myocardial endothelial nitric oxide synthase (eNOS) during myocardial ischemia-reperfusion seems to be the major mechanism by which isoflurane preconditioning and propofol postconditioning confer synergistic cardio protection. However, this synergistic cardio protection of volatile anesthetic and propofol is diminished in patients with diabetes. There is significant interference in cardio protection between the volatile anesthetic sevoflurane and the intravenous anesthetic propofol, which should not be used concomitantly during anesthesia if possible. Any type of ischemic “conditioning” appears to exhibit markedly reduced protection or completely loses protection in the presence of volatile anesthetics. Our recent study shows that propofol when used before inducing myocardial ischemia can confer cardio protection in diabetes. Multi-center clinical trial is needed to optimize the utilization of anesthetic in patients with diabetes that is less resistant to ischemic insults.

Biography

Zhengyuan Xia had served as a cardiovascular anesthetist for more than 10 years in China before he completed his Ph.D study at the University of British Columbia, in Canada in 2004. He is now Assistant Professor and Honorary Associate Professor and Deputy Director, Anesthesiology Research Laboratory of the Department of Anesthesiology, University of Hong Kong. His major focus of research is post-ischemic cardiac protection in diabetes. He has published more than 96 papers in reputed journals (such as Diabetes, Free Radical Biology & Medicine, Critical Care Medicine) and is serving as an Executive Editor of Journal of Diabetes & Metabolism.

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