Author has nothing to disclose with regard to commercial support.

more frequently used in relation to coronary surgery techniques, and with all the respect and empowerment of randomized trials,¹⁵ it seems to be “nonscientific” to ignore the mounting hard data on the advantages of multiarterial grafting.

Favaloro¹⁶ stated in an editorial published 47 years ago: “Generally, editorials are written to present personal views on a specific subject. With few exceptions, they seldom add to scientific knowledge. Usually, the author is more preoccupied with flaunting his rhetoric and literary style than in concentrating on basic facts.” We should sincerely question ourselves if this still applies only to editorials and if used for rhetoric purposes only.

Chaim Locker, MD
Department of Cardiovascular Surgery
Mayo Clinic
Rochester, Minn

References

1. Dashwood MR, Loesch A. Arterial versus venous conduits in coronary bypass surgery: comparing apples with oranges. *J Thorac Cardiovasc Surg.* 2019;157:253-4.
2. Gaudino M, Benedetto U, Fremes S, Biondi-Zoccai G, Sedrakyan A, Puskas JD, et al. Radial-artery or saphenous-vein grafts in coronary-artery bypass surgery. *N Engl J Med.* 2018;378:2069-77.
3. Dreifaldt M, Mannion JD, Bodin L, Olsson H, Zagozdon L, Souza D. The no-touch saphenous vein as the preferred second conduit for coronary artery bypass grafting. *Ann Thorac Surg.* 2013;96:105-11.
4. Kopjar T, Dashwood MR, Dreifaldt M, Souza D. No-touch saphenous vein as an important conduit of choice in coronary bypass surgery. *J Thorac Dis.* 2018; 10(suppl 26):S3292-6.
5. Song SW, Sul SY, Lee HJ, Yoo KJ. Comparison of the radial artery and saphenous vein as composite grafts in off-pump coronary artery bypass grafting in elderly patients: a randomized controlled trial. *Korean Circ J.* 2012; 42:107-12.
6. Gaudino M, Rahouma M, Abourab A, Leonard J, Kamel M, Di Franco A, et al. Radial artery versus saphenous vein as the second conduit for coronary artery bypass surgery: a meta-analysis. *J Thorac Cardiovasc Surg.* 2019;157:1819-25.
7. Locker C. Commentary: If RITA did not exist it would be necessary to invent it so if you can't beat them join them. *J Thorac Cardiovasc Surg.* 2019;157:1826-8.
8. Samano N, Geijer H, Liden M, Fremes S, Bodin L, Souza D. The no-touch saphenous vein for coronary artery bypass grafting maintains a patency after 16 years comparable to the left internal thoracic artery: a randomized trial. *J Thorac Cardiovasc Surg.* 2015;150:880-8.
9. Taggart DP, Amin S, Djordjevic J, Oikonomou EK, Thomas S, Kampoli AM, et al. A prospective study of external stenting of saphenous vein grafts to the right coronary artery: the VEST II study. *Eur J Cardiothorac Surg.* 2017;51:952-8.
10. Moshkowitz Y, Raanani E. The art of saphenous vein grafting and patency maintenance. *J Thorac Cardiovasc Surg.* 2016;151:300-2.
11. Harskamp RE, Lopes RD, Baisden CE, deWinter RJ, Alexander JH. Saphenous vein graft failure after coronary artery bypass surgery: pathophysiology management and future directions. *Ann Surg.* 2013;257:824-33.
12. Kurlansky P. Multiple arterial grafting for coronary revascularization: “a guide for the preplexed” *Trends Cardiovasc Med.* 2016;26:616-23.
13. Saran N, Locker C, Joyce DL. Expanding the use of bilateral internal thoracic artery: yes we can. *J Thorac Cardiovasc Surg.* 2018;156:1003-4.
14. Gaudino M, Alexander JH, Bakaeen FG, Ballman K, Barili F, Calafiore AM, et al. Randomized comparison of the clinical outcome of single versus multiple arterial grafts: the ROMA trial-rationale and study protocol. *Eur J Cardiothorac Surg.* 2017;52:1031-40.
15. Gaudino M, Mack JM, Taggart DP. Additional arterial conduits in coronary artery bypass surgery: finally coming of age. *J Thorac Cardiovasc Surg.* 2018; 156:541-3.
16. Favaloro RG. Surgical treatment of coronary arteriosclerosis by the saphenous vein graft technique: critical analysis. *Am J Cardiol.* 1971;28:493-5.

<https://doi.org/10.1016/j.jtcvs.2018.12.005>

REMOTE ISCHEMIC PRECONDITIONING INDUCES NEUROPROTECTION ASSESSED BY CEREBRAL MAGNETIC RESONANCE IMAGING:

ESSENTIAL ROLE OF BLOOD PRESSURE AND HEMOGLOBIN LEVELS

To the Editor:

We read with great interest the paper from Gasparovic and the colleagues¹ in which they randomized 33 remote ischemic preconditioning–treated patients and 33 control patients undergoing first-time isolated coronary artery bypass grafting and assessed the cerebral structure and function by magnetic resonance imaging. They found a lowered brain ischemic volume in remote ischemic preconditioning group than that in the control group.

Brain ischemic injury during on-pump coronary artery bypass grafting is still a serious complication,^{2,3} which has been proposed to several contributing causes: cardioembolic, thrombotic, hemorrhagic, lacunar, and hypoperfused.^{4,5} The hypoperfused factor for the brain ischemic volume is the easiest one to be monitored and prevented intraoperatively. As known to all, the cerebral oxygen supply includes the blood pressure, hemoglobin level, and saturation of arterial oxygen. Nevertheless, this study did not reveal information concerning the perioperative strategies for managing blood pressure and hemoglobin level. Hence, we wonder whether the perioperative situation (pre-bypass, intra-bypass, and post-bypass) of the 2 essential factors of the 2 groups are similar and unbiased.

Baohui Lou, PhD^a

Chenghui Zhou, PhD^b

^aDepartment of Radiology

Beijing Hospital

National Center of Gerontology

Beijing, China

^bDepartment of Anesthesiology

State Key Laboratory of Cardiovascular Disease

Fuwai Hospital

National Center for Cardiovascular Diseases

Authors have nothing to disclose with regard to commercial support.

Author has nothing to disclose with regard to commercial support.

Chinese Academy of Medical Sciences and Peking Union
Medical College
Beijing, China

References

1. Gasparovic H, Kopjar T, Rados M, Anticevic A, Rados M, Malojcic B, et al. Impact of remote ischemic preconditioning preceding coronary artery bypass grafting on inducing neuroprotection. *J Thorac Cardiovasc Surg.* 2019;157:1466-76.
2. Leary MC, Caplan LR. Technology insight: brain MRI and cardiac surgery—detection of postoperative brain ischemia. *Nat Clin Pract Cardiovasc Med.* 2007;4:379-88.
3. Wolman RL, Nussmeier NA, Aggarwal A, Kanchuger MS, Roach GW, Newman MF, et al. Cerebral injury after cardiac surgery: identification of a group at extraordinary risk. Multicenter Study of Perioperative Ischemia Research Group (McSPI) and the Ischemia Research Education Foundation (IREF) Investigators. *Stroke.* 1999;30:514-22.
4. Perez-Vela JL, Ramos-Gonzalez A, Lopez-Almodovar LF, Renes-Carreño E, Escribá-Bárceña A, Rubio-Regidor M, et al. Neurologic complications in the immediate postoperative period after cardiac surgery. Role of brain magnetic resonance imaging [in Spanish]. *Rev Esp Cardiol.* 2005;58:1014-21.
5. Likosky DS, Marrin CA, Caplan LR, Baribeau YR, Morton JR, Weintraub RM, et al. Determination of etiologic mechanisms of strokes secondary to coronary artery bypass graft surgery. *Stroke.* 2003;34:2830-4.

<https://doi.org/10.1016/j.jtcvs.2018.12.008>

GROUP HOMOGENEITY IS PARAMOUNT IN RANDOMIZED TRIALS

Reply to the Editor:

We appreciate the insightful comments made by Lou and colleagues¹ regarding our recent article.² The multifactorial origin of neuronal injury accompanying cardiac surgery has been shown by Hogue and colleagues.³ To measure the independent impact of remote ischemic preconditioning on the outcomes of our trial, we accounted for all known potential confounders by following strict and uniform intraoperative and perioperative protocols.⁴ A goal-oriented strategy was used for all measurable parameters.

The periprocedural data we gathered were not limited to arterial oxygenation and systemic blood pressure control mentioned by Lou and colleagues,¹ but also included cardiac output, pulmonary artery pressure, and mixed venous oxygen saturation measurements. Systemic biomarkers of tissue perfusion complemented the monitoring strategy. Interventions designed to optimize these parameters were outlined in the previously published study protocol.⁴

We studied a low-risk patient population, which enabled us to use conservative transfusion triggers.⁵ Studying a homogenous population ensured the appropriateness of using

unvarying criteria for blood transfusions in both patient groups.

Variables monitored in our trial, however, went beyond the limited number of potential confounders mentioned by Lou and colleagues.¹ The parameters mentioned in their commentary would fall short of our monitoring standard.¹ Hyperglycemia, for instance, contributes significantly to neurologic dysfunction via cellular acidosis, brain edema, and oxidative stress.³ Therefore, tight glucose control was also included in our perioperative management strategy. In addition, stringent temperature control during cardiopulmonary bypass was implemented as cerebral hyperthermia, which has been shown to be associated with worse neurologic outcomes.⁵

A predefined and identical set of interventions was used in both groups to correct for hemodynamic and laboratory parameters diverging from targeted values. Neither the aforementioned variables nor the previously reported patient characteristics showed any statistically significant intergroup differences. Strict patient selection criteria coupled with adherence to uniform intervention protocols allowed for robust between-group comparisons that brought the independent impact of remote ischemic preconditioning into focus.

Hrvoje Gasparovic, MD, PhD
Department of Cardiac Surgery
University Hospital Center Zagreb
University of Zagreb
Zagreb, Croatia

References

1. Lou B, Zhou C. Remote ischemic preconditioning induces neuroprotection assessed by cerebral MRI: essential role of blood pressure and hemoglobin levels. *J Thorac Cardiovasc Surg.* 2019;157:256-7.
2. Gasparovic H, Kopjar T, Rados M, Anticevic A, Rados M, Malojcic B, et al. Impact of remote ischemic preconditioning preceding coronary artery bypass grafting on inducing neuroprotection. *J Thorac Cardiovasc Surg.* 2019;157:1466-76.
3. Hogue CW, Gottesman RF, Stearns J. Mechanisms of cerebral injury from cardiac surgery. *Crit Care Clin.* 2008;24:83-98.
4. Gasparovic H, Kopjar T, Rados M, Anticevic A, Rados M, Malojcic B, et al. Impact of remote ischemic preconditioning preceding coronary artery bypass grafting on inducing neuroprotection (RIPCAGE): study protocol for a randomized controlled trial. *Trials.* 2014;15:414.
5. Society of Thoracic Surgeons Blood Conservation Guideline Task Force, Ferraris VA, Ferraris SP, Saha SP, Hessel EA II, Haan CK, et al. Perioperative blood transfusion and blood conservation in cardiac surgery: the Society of Thoracic Surgeons and the Society of Cardiovascular Anesthesiologists clinical practice guideline. *Ann Thorac Surg.* 2007;83:S27-86.

<https://doi.org/10.1016/j.jtcvs.2018.12.027>