

### Re. 'Remote Ischemic Preconditioning to Reduce Contrast-Induced Nephropathy: a Randomized Controlled Trial'

We read with great interest the paper by Menting et al. about the use of remote ischemic preconditioning (RIPC) to reduce contrast medium induced nephropathy (CIN) in patients at risk of CIN.<sup>1</sup> Their results in a group at high risk of CIN are in line with results from Er et al. who showed that use of such a procedure could reduce CIN in high risk patients. Er et al. identified CIN in 20 patients in their control group, but only six in their RIPC group ( $p = .002$ ).<sup>2</sup> In both studies, RIPC was performed as an adjunct to hydration. However, in our opinion, the role of hydration requires further discussion, especially where different hydration protocols are performed. Zarbock et al. showed that RIPC alone reduced the rate of acute kidney injury and the use of renal replacement therapy among high risk patients undergoing cardiac surgery.<sup>3</sup> Therefore, the question remains whether or not RIPC should be used as an adjunct or alone?

#### REFERENCES

- 1 Menting TP, Sterenborg TB, de Waal Y, Donders R, Wever KE, Lemson MS, et al. Remote ischemic preconditioning to reduce contrast-induced nephropathy: a Randomized Controlled Trial. *Eur J Vasc Endovasc Surg* 2015;**50**(4):527–32.
- 2 Er F, Nia AM, Dopp H, Hellmich M, Dahlem KM, Caglayan E, et al. Ischemic preconditioning for prevention of contrast medium-induced nephropathy: randomized pilot RenPro Trial (Renal Protection Trial). *Circulation* 2012;**126**(3):296–303.
- 3 Zarbock A, Schmidt C, Van Aken H, Wempe C, Martens S, Zahn PK, et al. Effect of remote ischemic preconditioning on kidney injury among high risk patients undergoing cardiac surgery: a randomized clinical trial. *JAMA* 2015;**313**(21):2133–41.

C. Koch

CHU Rennes, Imagerie, Rennes, France

S. Chaudru

INSERM, Centre d'investigation clinique CIC 14 14, Rennes, France

V. Jaquinandi

Cabinet d'angiologie, Trélazé, France

G. Mahé\*

INSERM, Centre d'investigation clinique, Rennes, France  
CHU Rennes, Imagerie Cœur-Vaisseaux, Rennes, France

\*Corresponding author. Pôle imagerie médicale et explorations fonctionnelles, Hôpital Pontchaillou, 2 rue Henri Le Guilloux, Rennes, F-35033, France.  
Email-address: [maheguillaume@yahoo.fr](mailto:maheguillaume@yahoo.fr) (G. Mahé)

© 2015 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved.

<http://dx.doi.org/10.1016/j.ejvs.2015.06.076>

### Response to "Re: Remote Ischemic Preconditioning to Reduce Contrast-induced Nephropathy: A Randomized Controlled Trial"

We thank Drs. Koch and colleagues for their comments. Their question, if remote ischemic preconditioning is sufficient on its own to prevent contrast medium induced nephropathy (CIN), cannot be answered with current literature data. In patients undergoing major (non-)cardiac surgery the efficacy of remote ischemic preconditioning (RIPC) remains unclear. Some randomized controlled trials showed a reduction in surgery related acute kidney injury (AKI),<sup>1,2</sup> whereas others could not confirm this.<sup>3,4</sup> Regarding the use of remote ischemic preconditioning in patients receiving intravascular contrast media, we feel that there is now suggestive evidence that remote ischemic preconditioning when added to hydration may prevent CIN.<sup>5,6</sup> However, the routine use of added RIPC in unselected patients cannot be advocated, and better identification of high risk patients is needed. Since hydration is proven to be effective in preventing CIN, and dehydration is associated with higher risk of AKI we would argue against the use of ischemic preconditioning alone in such high risk patients. However, we envisage that RIPC alone may be sufficient to prevent CIN in intermediate risk patients, and could be used to replace intravenous sodium chloride or intravenous sodium bicarbonate. Controlled studies are needed to explore the best strategies for the prevention of CIN.

#### REFERENCES

- 1 Zarbock A, Schmidt C, Van Aken H, Wempe C, Martens S, Zahn PK, et al. Effect of remote ischemic preconditioning on kidney injury among high risk patients undergoing cardiac surgery: a randomized clinical trial. *JAMA* 2015;**313**(21):2133–41.
- 2 Ali ZA, Callaghan CJ, Lim E, Ali AA, Nouraei SA, Akthar AM, et al. Remote ischemic preconditioning reduces myocardial and renal injury after elective abdominal aortic aneurysm repair: a randomized controlled trial. *Circulation* 2007;**116**(Suppl 11):I98–105.
- 3 Gallagher SM, Jones DA, Kapur A, Wragg A, Harwood SM, Mathur R, et al. Remote ischemic preconditioning has a neutral effect on the incidence of kidney injury after coronary artery bypass graft surgery. *Kidney Int* 2015;**87**(2):473–81.
- 4 Walsh SR, Sadat U, Boyle JR, Tang TY, Lapsley M, Norden AG, et al. Remote ischemic preconditioning for renal protection during elective open infrarenal abdominal aortic aneurysm repair: randomized controlled trial. *Vasc Endovascular Surg* 2010;**44**(5):334–40.
- 5 Menting TP, Sterenborg TB, de Waal Y, Donders R, Wever KE, Lemson MS, et al. Remote ischemic preconditioning to reduce contrast-induced nephropathy: a randomized controlled trial. *Eur J Vasc Endovasc Surg* 2015;**50**(4):527–32.
- 6 Er F, Nia AM, Dopp H, Hellmich M, Dahlem KM, Caglayan E, et al. Ischemic preconditioning for prevention of contrast medium-induced nephropathy: randomized pilot RenPro Trial (Renal Protection Trial). *Circulation* 2012;**126**(3):296–303.