Correspondence

Letter by Eastwood et al Regarding Article, “Association Between Postresuscitation Partial Pressure of Arterial Carbon Dioxide and Neurological Outcome in Patients With Post–Cardiac Arrest Syndrome”

To the Editor,

We read the article by Roberts and colleagues1 with interest. Although we agree that hypocapnia has been demonstrated to be common and is a predictor of poor neurological outcome after cardiac arrest, we are concerned that the findings may lack external validity. In a recent study involving 16,542 patients admitted to 125 Australian and New Zealand intensive care units after cardiac arrest between 2000 and 2011,2 we found that hypocapnia and hypercapnia were common. Importantly, we also found that compared with normocapnia, hypercapnia was associated with a greater likelihood of discharge home among survivors. Such findings suggest that mild hypercapnia may actually have neuroprotective properties during the immediate postresuscitation phase.

We note that the median number of PaCO2 measurements assessed per patient was only 2 (interquartile range, 1–4) and that 83% of cardiac arrests occurred in hospital.1 In our institution, the median number of arterial blood gas tests per patient is 9 (interquartile range, 7–10) during the first intensive care unit day, and our proportion of in-hospital cardiac arrest is only 35%, suggesting a much greater level of physiological monitoring and management of a very different population in Australian and New Zealand intensive care units. Moreover, mortality in the US cohort was 68% compared with 55.6% in Australia and New Zealand, and unfavorable neurological outcome was seen in 74% of survivors compared with only 35.3% of patients failing to be discharged home in Australia and New Zealand.2 Thus, the findings of Roberts and colleagues may reflect local clinical management practices that differ profoundly from other settings internationally and should be interpreted with great caution.

Although we agree that hypocapnia should be avoided, we urge caution in implementing policies of deliberate avoidance of hypercapnia in the immediate postresuscitation phase. Moreover, we believe that there is sufficient evidence to justify phase 1 pilot randomized, controlled trials of therapeutic hypercapnia in patients who survive cardiac arrest and require mechanical ventilation. We have now initiated such a trial (Australian New Zealand Clinical Trial Registry No. ACTRN1262000690853).

Disclosures

None.

Glenn M. Eastwood, RN, BN, GradDipNsg(Crit Care), PhD
Satoshi Suzuki, MD, PhD
Rinaldo Bellomo, MBBS, MD, FRACP, FCICM, PGDipEcho
Department of Intensive Care
Austin Hospital
Heidelberg, Victoria, Australia

References


(Circulation. 2014;129:e9.)
© 2014 American Heart Association, Inc.

Circulation is available at http://circ.ahajournals.org
DOI: 10.1161/CIRCULATIONAHA.113.004554
Letter by Eastwood et al Regarding Article, "Association Between Postresuscitation Partial Pressure of Arterial Carbon Dioxide and Neurological Outcome in Patients With Post–Cardiac Arrest Syndrome"
Glenn M. Eastwood, Satoshi Suzuki and Rinaldo Bellomo

_Circulation_. 2014;129:e9
doi: 10.1161/CIRCULATIONAHA.113.004554

_Circulation_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2014 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/129/1/e9

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in _Circulation_ can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to _Circulation_ is online at:
http://circ.ahajournals.org//subscriptions/