more diverse scientific impact and greater heterogeneity, such as in medicine. Compared with researchers in the physical sciences, researchers in medicine may have smaller numbers of researchers in each field, differing areas of research interest, differing citation practices, and varying levels of academic commitment. Bibliometrics can be measured with increasing ease due to electronic scientific citation databases, and benchmarking of research performance of individuals is valuable due to the increasing use of bibliometrics to assess those applying for funding or academic promotion. However, it may be more appropriate to apply bibliometrics to high-achieving researchers in medicine rather than ‘young’ researchers with few publications, which is becoming more common. I would suggest that because of the ‘citation window’ of scientific publications and the known limitations of citation indices, a standardized timeframe should be introduced before bibliometrics are used to assess research performance of researchers in medicine, or at a minimum, for assessing researchers of a young academic age.

Hirsch advocated that ‘a single number can never give more than a rough approximation to an individual’s multifaceted profile’ and similarly bibliometrics should not be used exclusively to evaluate performance of researchers in medicine.

Declaration of interest

None declared.

J. D. O’Leary*
Cork, Ireland
*E-mail: j.d.oleary@umail.uc.ie

1 Moppett IK, Hardman JG. Bibliometrics of anaesthesia researchers in the UK. Br J Anaesth 2011; 107: 351–6
2 Hirsch JE. An index to quantify an individual’s scientific research output. Proc Natl Acad Sci USA 2005; 102: 16569–72

doi:10.1093/bja/aer432

Reply from the authors

Editor—We thank Dr O’Leary for his interest in our paper.1 We would agree that neither a single number (such as the h-index) nor even a panel of bibliometrics as we presented in our paper can provide a complete description of research quality or potential. However, they do seem to co-associate with other markers of academic standing such as professorships2 and membership of journal editorial boards.3 Other markers of quality, such as grant income, are also problematic, partly due to the self-propagating nature of grant awards. Whatever the shortcomings, bibliometrics are used and it is important that the anaesthesia research community has some understanding of its current metrics. As Dr O’Leary correctly implies, the h-index and most other indices are time-dependent and therefore favour longer established researchers. We believe that research in this field should be explicit about the time frame studied. We therefore selected a recent publication window (2004–8) in an attempt to define contemporary rather than historical research output. Of course, this is still disadvantageous to very new researchers, but it does allow future studies in this field to compare like with like. Although there have been other attempts to correct for academic ‘age’ or output,3 none of them works particularly well at the very early stages of an academic career.

Declaration of interest


I. K. Moppett*
J. G. Hardman
Nottingham, UK
*E-mail: iain.moppett@nottingham.ac.uk

1 Moppett IK, Hardman JG. Bibliometrics of anaesthesia researchers in the UK. Br J Anaesth 2011; 107: 351–6
4 Hirsch JE. An index to quantify an individual’s scientific research output. Proc Natl Acad Sci USA 2005; 102: 16569–72
5 Molinari JF, Molinari A. A new methodology for ranking scientific institutions. Scientometrics 2008; 75: 163–74

doi:10.1093/bja/aer433

Increase in cerebral metabolites during induction of propofol anaesthesia

Editor—We performed microdialysis of cerebral interstitial metabolites during induction of propofol anaesthesia and tracheal intubation in a case series of patients undergoing asleep–awake–asleep brain tumour surgery. While it is generally assumed that propofol is associated with suppression of cerebral metabolism,1,2 we found an unexpected transient increase in cerebral metabolites in parallel with an increase in heart rate after tracheal intubation.

Three patients underwent awake brain surgery for brain tumour resection. Anaesthesia included propofol (4–8 mg kg\(^{-1}\) h\(^{-1}\)) supplemented by remifentanil (0.1–1 µg kg\(^{-1}\) h\(^{-1}\)) with mivacurium as a neuromuscular blocking agent. After craniotomy and opening of the dura, a microdialysis catheter (CMA, Stockholm, Sweden) was placed in white matter of normal appearance within the predefined tumour resection area. Microdialysis samples (0.5 µl min\(^{-1}\) flow rate, 10–60 min intervals) were analysed for glucose, lactate, pyruvate, glycerol, and glutamate (CMA 600...