Levobupivacaine base and levobupivacaine hydrochloride

Editor—The British Journal of Anaesthesia has published six papers comparing the effects of levobupivacaine, the S(-)-stereoisomer of bupivacaine with bupivacaine and ropivacaine, between 1998 and 2004, and three papers on various aspects of levobupivacaine alone. None of these papers calculated the concentration according to molarity. Two of them noted that there is a difference between the clinical and molar concentrations of levobupivacaine that needs to be considered when comparing it with racemic bupivacaine or ropivacaine. In a third paper, it was mentioned in the methodology that bupivacaine hydrochloride was compared with levobupivacaine base. The authors of the other papers, along with the majority of authors of published studies of levobupivacaine appear not to have considered that the label of the commercially available levobupivacaine (Chirocaine®) indicates the concentration of the base of the molecule, and not, as in the case of other amide-linked local anaesthetics such as racemic bupivacaine and ropivacaine, the concentration of the hydrochloride of the molecule.

Since the molecular weight of hydrogen chloride is 36.46, it will make a difference of 12.6% in the concentration of levobupivacaine between a concentration calculated as base or hydrochloride. It follows that, for example 5 mg ml\(^{-1}\) (0.5%) concentration of levobupivacaine base is equivalent to 5.63 mg ml\(^{-1}\) (0.563%) of levobupivacaine hydrochloride, which is then erroneously compared with 5 mg ml\(^{-1}\) of ropivacaine or levobupivacaine hydrochloride in the studies.

Although this has been pointed out as early as in 1998 in this journal, and again by Schug in another anaesthesia journal in 2001, and the commercial product label of Chirocaine® clearly states the concentration of the base of the molecule, the 12.6% difference in concentration seems still to be ignored both by investigators and clinicians. As a consequence, the results of levobupivacaine compared with the same concentration of bupivacaine or ropivacaine in most regional anesthetic block studies need to be reinterpreted. It is of note that some of these studies have identified a 17% (\(P<0.04\)) and a 19% (not significant)\(^{11}\) potency difference in favour of levobupivacaine, which might be partially explained by this erroneous calculation.

P. H. Rosenberg\(^1\)*
S. A. Schug\(^2\)
*E-mail: per.rosenberg@hus.fi

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ILMA in cervical spine immobilization

Editor—We read with interest the recent article by Komatsu and colleagues describing the use of the intubating laryngeal mask (ILMA) when the cervical spine has been immobilized by a rigid collar. We would agree that blind intubation through an ILMA is a reasonable strategy when tracheal intubation is required with a patient. However, we question the authors’ statement that the ILMA is a reasonable method of choice for immobilizing the cervical spine in the urgent, fasted patient. We would agree that the ILMA should be the method of choice for immobilizing the cervical spine in the urgent/emergency situation before any instrumentation, to optimize the chances of a rapid, successful intubation.

Reduced mouth opening (inter-incisor distance) of <25 mm has been cited as contributing to the failure of insertion of the ILMA. Heath suggested a reduction in mouth opening as the main factor contributing to the poorer view at laryngoscopy when a cervical collar is applied. Our own data suggest mouth opening with a cervical collar in place is very variable and a significant proportion of people do not have the 20 mm of mouth opening recommended by Brain and colleagues.

The authors mention direct laryngoscopy with the aid of a gum elastic bougie but fail to mention the other option in this situation, which is to remove the front part of the collar after induction together with manual in-line stabilization. This technique has been shown to be safe and effective. We would suggest that this should be the method of choice for immobilizing the cervical spine in the urgent/emergency situation before any instrumentation, to optimize the chances of a rapid, successful intubation.

C. M. Goutcher*
V. Lochhead
Glasgow, UK
*E-mail: c.goutcher@ntlworld.com

Editor—As specified in the discussion section of our article, we agree with Drs Goutcher and Lochhead that the ILMA is not first choice for airway management in emergency situations. We conclude this because the oesophagus was initially intubated in 14% of our patients and 34% required multiple intubation

Correspondence

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