**Comparison of sevoflurane with halothane: statistically valid?**

Sir,—I read with interest the article by Taivainen and colleagues [1] comparing the effects of sevoflurane and halothane on the quality of anaesthesia and serum glutathione transferase alpha and fluoride in paediatric patients.

The authors mentioned the use of the Student's *t*-test or Fisher's exact test for intergroup comparisons of anaesthesia data. They also mentioned the use of analysis of variance (ANOVA) to test the statistical significance of the differences of the cardiovascular and laboratory variables between baseline and each time.

Detailed examination of table 3 (recovery data) shows that the mean extubation time in the sevoflurane group is 3.5 (SD 3.4) min. This suggests that a patient's trachea could have been extubated at —3.3 min (mean ± 2 SD). The same is true for the extubation time in the halothane group (3.8 (3.0) min). The trachea could have been extubated at —2.2 min (mean ± 2 SD). This pattern is repeated through the rest of the data in table 3. Emergence could have occurred in the sevoflurane group at —9.4 min (mean ± 2 SD). In the halothane group emergence could have occurred at —0.2 min (mean ± 2 SD).

Hand squeeze is another variable the authors studied as part of the recovery data. Again, hand squeeze may occur at —5.1 min (mean ± 2 SD) in the sevoflurane group and at —2.6 min (mean ± 2 SD) in the halothane group.

Table 4 presents laboratory data on alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin and creatinine concentrations within and between groups. A concentration of ALT of —2.2 iu litre⁻¹ (mean ± 2 SD) is possible in the baseline sevoflurane group. A concentration of ALT of —3.2 iu litre⁻¹ (mean ± 2 SD) is possible in the same group at 24 h. In the same group, a concentration of bilirubin of —5.7 µmol litre⁻¹ (mean ± 2 SD) is possible in the baseline group and —6.9 µmol litre⁻¹ at 24 h.

The reason why these values can be obtained is because the data do not follow a normal distribution and are skewed. In this case, the authors have used incorrect tests. They should have used medians and ranges, and if they used the Kruskal–Wallis test they failed to mention it.

The authors evaluated physiological variables, that is motor activity, respiration and arterial pressure, using a modified Aldrete score system. In figure 2 they represented their results as mean ± 1 SD in several groups. However, SEM is an expression of the mean value. SEM ± 2 SD expresses the mean value. Mean ± 2 SEM is an effective and correct way to differentiate mean values from each other if parametric tests have been used. That is why we expressed our figures as mean ± SEM.

Finally, Dr Malagon states that the method for patient randomization is almost never mentioned in scientific literature. We used sealed envelopes containing a letter to indicate either sevoflurane or halothane. This closed randomization was made by random number tables.

**Rechargeable Optima laryngoscopes**

Sir,—We wish to draw your attention to two incidents involving rechargeable Optima laryngoscopes.

In the first incident, a 2.5-V (medium size) rechargeable battery was inserted in the incorrect direction into the Optima laryngoscope. When used, the handle was extremely hot, so much so that it could not be hand-held, and the battery had burned at its two points of contact. It would seem that the charging unit had no effect in this case as, when we purposefully re-inserted the battery (again in the incorrect direction) some time later, the incident could be reproduced, with the handle becoming extremely hot within seconds.

The mechanism in this instance seems to be that the battery makes contact at the base of the laryngoscope and against the handle (via a metal connector incorporated into the battery

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Sir,—Dr Malagon draws attention to the statistical methods used in our article [1]. We reported our recovery data (times from end of anaesthesia to extubation, emergence, hand squeeze and orientation) as mean (SD) because these data were parametric. As most of the recovery data naturally are skewed to the right, we admit that optimal statistical analysis would have been a non-parametric test. It is important to note that all of the mean values are correct and that the figures showing mean ± 1 SD in our tables represent 75-85% of the material for both sevoflurane and halothane groups. A non-parametric Mann–Whitney *U* test provides even greater strength to indicate the differences between our study groups, not only with regard to recovery data but also to physiological and psychomotor data.

Another point of criticism by Dr Malagon is the use of SEM in scientific analysis. SEM expresses the scatter of a population whereas SEM is an expression of the mean value. Mean ± 2 SEM is a range inside which 95% of the mean values of similar study populations locate. Thus mean ± SEM is an effective and correct way to differentiate mean values from each other if parametric tests have been used. That is why we expressed our figures as mean ± SEM.