Brief Pediatric Cases Use a Similar Mass of Sevoflurane as Adult Anesthetics Lasting Over an Hour

Presenting Author Ross Kennedy [1,2]
Co-authors Ben van der Grind[1], John Page[3], Guy Vesto[3] , Richard French[1]
[1] Department of Anaesthesia, Christchurch Hospital, Christchurch NEW ZEALAND
[2] Department of Anaesthesia, University of Otago - Christchurch, Christchurch NEW ZEALAND
[3] GE Healthcare, Madison WI

Background / Introduction: It is established that volatile anaesthetic agents come with an economic and environmental cost. Over recent years, considerable gains have been made to reduce fresh gas flow (FGF) and thus agent waste during volatile anaesthesia. However, in paediatric anaesthesia, high FGFs are still commonly employed especially during induction, but also during maintenance of anaesthesia.

Methods: Data for this study was collected as part of an ongoing collaboration between CDHB and GE-Healthcare looking at data routinely logged during anesthesia, with an emphasis on fresh gas flow rates.

We compared sevoflurane usage from 200 anaesthetic episodes of 20 minutes or less duration for myringotomies with ventilation tubes or adenoidectomies in pediatric patients with that of 536 anesthetics where sevoflurane was used for adult general surgery in a single OR.

Results: For the pediatric cases, the median duration was 13 minutes and the duration of agent delivery as 8 minutes [IQR 6-10]. The median amount of sevoflurane used was 13 mL [IQR 10-15]. For cases performed with a circle system, 12 ml of sevoflurane was used. With a T-piece (open system), 14 ml of liquid sevoflurane was used.

In comparison, the median duration of adult general surgery cases was 86 minutes and the duration of agent delivery was 68 minutes [IQR 38-120]. The median amount of sevoflurane used was 12 mL [IQR 8-17].

Conclusions: A median of 8 minutes of agent delivery for pediatric anaesthesia (for ventilation tubes or adenoidectomies) consumed a similar amount (slightly more) sevoflurane than 68 minutes (over 8 times) of agent delivery for adult anaesthesia.

While there are significant differences in the anesthesia practice and requirements in these groups (eg intravenous *vs* inhalational induction) these results highlight the inefficient use of sevoflurane common in paediatric anaesthetic practice.